....Mornings LEFT OF SCHOOL :)

HAPPY FRIDAY!

Fri. 6/1 - Final Review
Mon. 6/4 - Final Review

Final's Schedule:

Tues. 6/5 - **FINAL EXAMS**
Wed. 6/6 - **FINAL EXAMS**

Tuesday, June 5, 2018

- Four Period day.
- Lunch with period 3 teacher.
- One hour, 25 minute classes

Period 1: Study Hall	8:05-9:30
Period 2	9:40-11:05
Period 3	11:15-1:10*
**Lunch to be determined*	
Period 4	1:20-2:45

Wednesday, June 6, 2018

- Four Period day.
- Lunch with period 6 teacher.
- One hour, 25 minute classes

Period 1: Finals	8:05-9:30
Period 5	9:40-11:05
Period 6	11:15-1:10*
**Lunch to be determined*	
Period 7	1:20-2:45

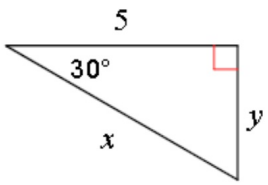
Class Plan

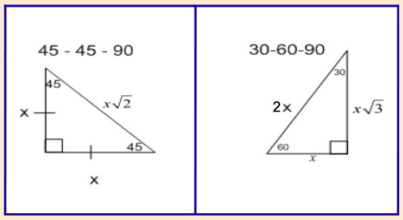
1. Warm-ups
   *Unit 4: Radicals and unit circle
   *Unit 5: Exponents
   *Unit 6: Quadratics
2. Notes from the past...
3. Practice

Unit 4: Warm-up:

1) Find the missing sides of the triangle.

13)





Unit 4: Warm-up:

1) Find the missing sides of the triangle.

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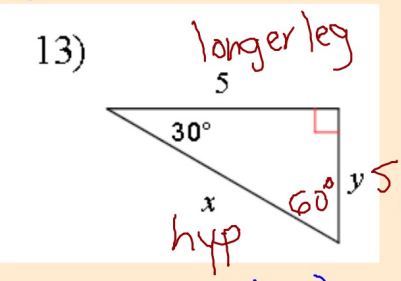
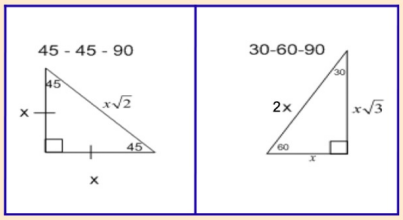




$y = \frac{5}{\sqrt{3}}\left(\frac{\sqrt{3}}{\sqrt{3}}\right)$

$y = \frac{5\sqrt{3}}{3}$

$x = 2 \cdot y$

$x = 2\left(\frac{5\sqrt{3}}{3}\right) = \frac{10\sqrt{3}}{3}$

Unit 5: Warm-up:

Simplify the expression. Your answer should contain only positive exponents.

39) $\dfrac{\left(m^{-2}\right)^{-1}}{m^{-2} \cdot m^{2} n^{-4}}$

42) $3n \cdot 4m^{-\frac{1}{2}} n^{\frac{1}{3}}$

Unit 5: Warm-up:

Simplify the expression. Your answer should contain only positive exponents.

39) $\dfrac{\left(m^{-2}\right)^{-1}}{m^{-2} \cdot m^{2} n^{-4}}$

$= \dfrac{m^{2}}{m^{0} n^{-4}}$

$= \boxed{m^{2} \cdot n^{4}}$

42) $3n \cdot 4m^{-\frac{1}{2}} n^{\frac{1}{3}}$

$= 3n^{3/3} \cdot 4 m^{-1/2} n^{1/3}$

$= 12 n^{4/3} m^{-1/2}$

$= \dfrac{12 n^{4/3}}{m^{1/2}} \left(\dfrac{m^{1/2}}{m^{1/2}}\right) = \boxed{\dfrac{12 n^{4/3} n^{1/2}}{m}}$

Unit 6: Warm-up:

Determine how to solve the quadratic equation (square root, factorize, or use quadratic formula), then solve.

1) Solve for n.

47) $n^2 + 2n - 24 = 0$

2) Solve for n.

49) $n^2 - 49 = 0$

3) Solve for ***a***.

54) $3a^2 = 24$

4) Solve for ***v***.

56) $2v^2 + 2v = 5$

Unit 6: Warm-up:

1) Solve for n.

47) $n^2 + 2n - 24 = 0$

2) Solve for n.

49) $n^2 - 49 = 0$

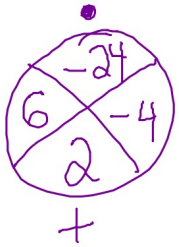
Unit 6: Warm-up:

1) Solve for n.

47) $n^2 + 2n - 24 = 0$

$(n+6)(n-4)=0$

$n=-6, n=4$



2) Solve for n.

49) $n^2 - 49 = 0$

$+49 \quad +49$

$n^2 = 49$

$n = \sqrt{49} = \pm 7$

OR

$n^2 - 0n - 49 = 0$

$(n-7)(n+7)=0$

$n = 7, -7$

Unit 6: Warm-up:

3) Solve for ***a***.

54) $3a^2 = 24$

4) Solve for ***v***.

56) $2v^2 + 2v = 5$

Unit 6: Warm-up:

3) Solve for *a*.

54) $\frac{3a^2}{3} = \frac{24}{3}$

$a^2 = 8$

$a = \sqrt{8}$

$a = \pm 2\sqrt{2}$

$\sqrt{8} = \sqrt{4 \cdot 2} = 2\sqrt{2}$

4) Solve for *v*.

56) $2v^2 + 2v = 5$ $2v^2+2v-5=0$

$a=2, b=2, c=-5$

$v = \frac{-2 \pm \sqrt{2^2 - 4(2)(-5)}}{2(2)}$

$v = \frac{-2 \pm \sqrt{44}}{4}$

$v = \frac{-2 \pm 2\sqrt{11}}{4}$

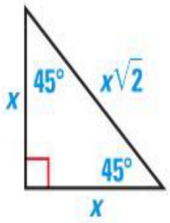
$v = \frac{-1+\sqrt{11}}{2}$

$v = \frac{-1-\sqrt{11}}{2}$

Unit 4: Radicals and unit circle

45°-45°-90° Triangle Theorem

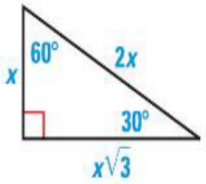
hypotenuse = leg • $\sqrt{2}$



30°-60°-90° Triangle Theorem

hypotenuse = 2 • shorter leg

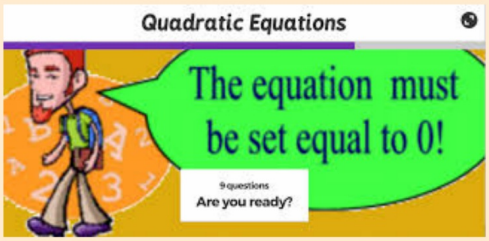
longer leg = shorter leg • $\sqrt{3}$



Concepts within Unit 5 and 6

Properties of Exponents

product	$a^m \cdot a^n = a^{m+n}$
quotient	$\frac{a^m}{a^n} = a^{m-n}$
power	$(a^m)^n = a^{m \cdot n}$
inverse	$a^{-1} = \frac{1}{a}$
zero power	$a^0 = 1$

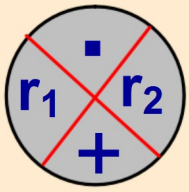


$ax^2 + bx + c = 0$

[a, b, c are real numbers]

Factoring Quadratics:

$(x - r_1)(x - r_2) = 0$



Unit 5:

Example 9 Self Tutor

Simplify using the index laws:

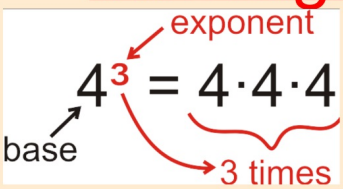
a $3x^2 \times 5x^5$ **b** $\dfrac{20a^9}{4a^6}$ **c** $\dfrac{b^3 \times b^7}{(b^2)^4}$

a
$$\begin{aligned} & 3x^2 \times 5x^5 \\ &= 3 \times 5 \times x^2 \times x^5 \\ &= 15 \times x^{2+5} \\ &= 15x^7 \end{aligned}$$

b
$$\begin{aligned} \frac{20a^9}{4a^6} &= \frac{20}{4} \times a^{9-6} \\ &= 5a^3 \end{aligned}$$

c
$$\begin{aligned} \frac{b^3 \times b^7}{(b^2)^4} &= \frac{b^{3+7}}{b^{2\times 4}} \\ &= \frac{b^{10}}{b^8} \\ &= b^{10-8} \\ &= b^2 \end{aligned}$$

Investigation:Index Laws



(Calculator may help as well)

<--- Use expanded form to discover the laws/properties.

a) $5^3 \cdot 5^4 =$ _____ $= 5^{\square}$ <--- change to "5"

(Properties of Exponents)

$b^m \cdot b^n = b^{\square}$

$b^0 = \square$

$(b^m)^n = b^{\square}$

$\frac{1}{b^m} = \square$

$\frac{b^m}{b^n} = b^{\square}$

$b^{-m} = \frac{}{\square}$

Investigation:Index Laws

Original = Expanded Form = Simplified, one base **(Exponential Form)**

$$x^2 \cdot x^4 = x \cdot x \cdot x \cdot x \cdot x \cdot x = x^6$$

1. Rewrite each expression in expanded form (***shown above***). Then rewrite it in ***simplified*** exponential form with a single base.

a) $5^3 \cdot 5^4 =$ 5·5·5·5·5·5·5 $= 5^{7}$

b) $a^2 \cdot a^3 =$ a·a·a·a·a $= a^{5}$

2. Examine the simplified form and the exponents in parts **a - b.**

i. What operation did you do with the exponents to simplify your expression?

ADD

ii. Write a rule for simplifying exponents when we multiply terms with the same base:

$$b^m \cdot b^n = b^{m+n}$$

Investigation: Index Laws

Original = Expanded Form = Simplified, one base **(Exponential Form)**

$$(x^3)^4 = (x^3)(x^3)(x^3)(x^3) = x^{12}$$

3. Rewrite each expression in expanded form (***shown above***). Then rewrite it in ***simplified*** exponential form with a single base.

a) $(3^2)^4 =$ $(3^2)(3^2)(3^2)(3^2)$ $= 3^{8}$

b) $(xy^6)^2 =$ $(xy^6)(xy^6) = x \cdot x \cdot y \cdot y \cdot y \cdot y \cdot \ldots$ $= x^{2}y^{12}$

c) $(2w^5)^5 =$ $(2w^5)(2w^5)(2w^5)(2w^5)(2w^5)$ $= 32w^{25}$

4. Examine the simplified form and the exponents in parts **a - c.**

i. What operation did you do with the exponents to simplify your expression?

multiply

ii. Write a rule for simplifying exponents when a base is raised by more than one exponent:

$$(b^m)^n = b^{m \cdot n}$$

Investigation:Index Laws

5. Rewrite in expanded form. Then rewrite it in ***simplified*** exponential form with a single base.

a) $\frac{3^5}{3^1} = \frac{3\cdot3\cdot3\cdot3\cdot3}{3} = 3^{4}$

b) $\frac{y^7}{y^2} = \frac{y\cdot y\cdot y\cdot y\cdot y\cdot y\cdot y}{y\cdot y} = y^{5}$

6. Examine the simplified form and the exponents in parts **a – b** from #5.

i. What operation did you do with the exponents to simplify your expression?

Subtract

ii. Write a rule for simplifying exponents when we are dividing terms with the same base:

$$\frac{b^m}{b^n} = b^{m-n}$$

Investigation:Index Laws

Original = expanded form = Simplified Exonential form

$$1 = \frac{x^3}{x^3} = \frac{x \cdot x \cdot x}{x \cdot x \cdot x} = x^{\boxed{0}} = ?$$ $x^{3-3} = x^0$

7. Rewrite each expression in expanded form (***shown above***). Then rewrite it in ***simplified*** exponential form with a single base.

a) $\frac{4^3}{4^3} = \frac{4.4.4}{4.4.4} = 4^{\boxed{0}} = 1$

b) $\frac{x^2}{x^2} = \frac{x \cdot x}{x \cdot x} = x^{\boxed{0}} = 1$

8. Examine the simplified form and the exponents in parts **a** and **b** from #7.

i. Write a rule for the exponent of ***zero***.

$$b^0 = \boxed{1}$$

Investigation:Index Laws

9. Rewrite in expanded form. Then rewrite it in ***simplified*** exponential form with a single base.

a) $\frac{3^2}{3^5} = \frac{\cancel{3}\cdot\cancel{3}}{\cancel{3}\cdot\cancel{3}\cdot 3\cdot 3\cdot 3} = \frac{1}{3^{\boxed{3}}} = 3^{\boxed{-2}}$

b) $\frac{r}{r^3} = \frac{\cancel{r}}{\cancel{r}\cdot r\cdot r} = \frac{1}{r^{\boxed{2}}} = r^{\boxed{-2}}$

10. Examine the simplified form and the exponents in parts **a** and **b** from #9.

i. Write a rule for the **negative property of exponents.**

$b^{-m} = \boxed{\frac{1}{b^m}}$ **AND** $\frac{1}{b^m} = \boxed{b^{-m}}$

If the bases a and b are both positive, and the indices m and n are integers, then:

$a^m \times a^n = a^{m+n}$	To **multiply** numbers with the **same base**, keep the base and **add** the indices.
$\frac{a^m}{a^n} = a^{m-n}$	To **divide** numbers with the same base, keep the base and **subtract** the indices.
$(a^m)^n = a^{mn}$	When **raising** a **power** to a **power**, keep the base and **multiply** the indices.
$(ab)^n = a^n b^n$	The power of a product is the product of the powers.
$\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$	The power of a quotient is the quotient of the powers.
$a^0 = 1, \quad a \neq 0$	Any non-zero number raised to the power of zero is 1.

$a^{-n} = \frac{1}{a^n}$ and in particular $a^{-1} = \frac{1}{a}$.

B Chapter 2 INDEX LAWS

Product Property of Exponents

$$a^m \cdot a^n = a^{m+n}$$

Quotient Property of Exponents

$$\frac{a^m}{a^n} = a^{m-n}$$

Definition of Negative Exponents

$$a^{-n} = \frac{1}{a^n} \quad \text{or} \quad \left(\frac{a}{b}\right)^{-n} = \left(\frac{b}{a}\right)^{n}$$

Zero Exponents

$$a^0 = 1$$

Power of a Power Property

$$(a^m)^n = a^{mn}$$

Power of a Product Property

$$(ab)^m = a^m b^m$$

Power of a Quotient Property

$$\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$$

***Important:
Recognize how connected the properties are.

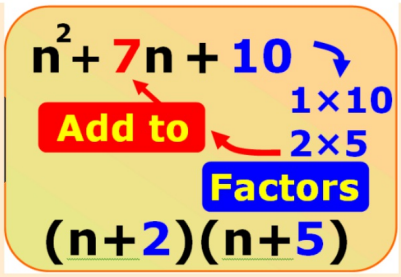
E FACTORISING QUADRATIC TRINOMIALS

Consider the expansion

$$\begin{aligned}(x+1)(x+6) &= x^2+6x+x+1\times 6 \qquad \{\text{using FOIL}\}\\ &= x^2+(6+1)x+(1\times 6)\\ &= x^2+(\textbf{sum of } 1 \text{ and } 6)x+(\textbf{product of } 1 \text{ and } 6)\\ &= x^2+7x+6\end{aligned}$$

So, to factorise x^2+7x+6, we need two numbers with a sum of 7 and a product of 6. These numbers are 1 and 6, and so $x^2+7x+6=(x+1)(x+6)$.

We call this the **sum and product method.**



B THE NULL FACTOR LAW

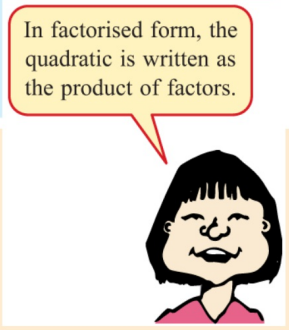
For quadratic equations which are not of the form $x^2 = k$, we need an alternative method of solution.

If a quadratic equation is given in **factorised form** then we can use the **Null Factor law**.

The **Null Factor law** states that:

When the product of two or more numbers is zero, then *at least one* of them must be zero.

So, if $ab = 0$ then $a = 0$ or $b = 0$.



Quadratic Formula:

for solving $ax^2 + bx + c = 0$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Given any quadratic equation, the quadratic formula can solve for all values of *x*
(real and not real)

MYP Math 9 - Final Review

Do: Units 4, 5, 6 Review Handout

Product Property of Exponents

$a^m \cdot a^n = a^{m+n}$

Quotient Property of Exponents

$\frac{a^m}{a^n} = a^{m-n}$

Definition of Negative Exponents

$a^{-n} = \frac{1}{a^n}$ or $\left(\frac{a}{b}\right)^{-n} = \left(\frac{b}{a}\right)^n$

Zero Exponents

$a^0 = 1$

Power of a Power Property

$(a^m)^n = a^{mn}$

for solving $ax^2 + bx + c = 0$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Done? Work on other HW

Unit 4: Radicals and Special Right Triangles

Solve each proportion.

1) $\frac{x+2}{2} = \frac{7}{5}$

Unit 4: Radicals and Special Right Triangles

Solve each proportion.

2) $\frac{n+4}{8} = \frac{n-8}{2}$

Unit 4: Radicals and Special Right Triangles

Simplify.

3) $\sqrt{150}$

4) $\sqrt{256}$

Unit 4: Radicals and Special Right Triangles

Simplify.

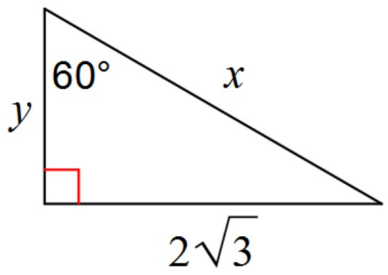
5) $\sqrt{72}$

6) $\sqrt{300}$

Unit 4: Radicals and Special Right Triangles

Find the missing side lengths. Leave your answers as radicals in simplest form.

7)



Unit 4: Radicals and Special Right Triangles

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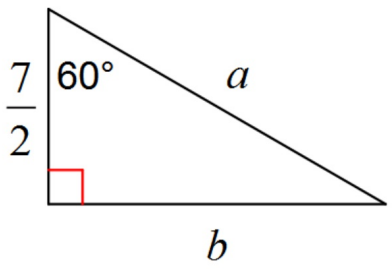
8)



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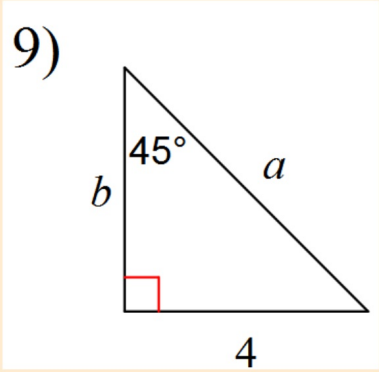

Unit 4: Radicals and Special Right Triangles

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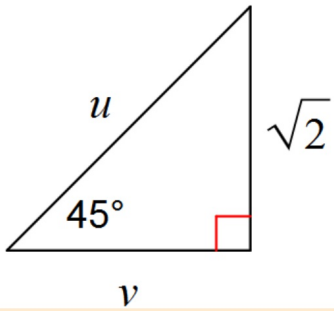
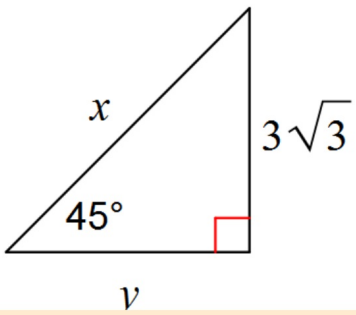
10)



Unit 4: Radicals and Special Right Triangles

Find the missing side lengths. Leave your answers as radicals in simplest form.

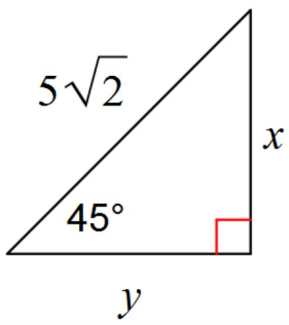
11)



Unit 4: Radicals and Special Right Triangles

Find the missing side lengths. Leave your answers as radicals in simplest form.

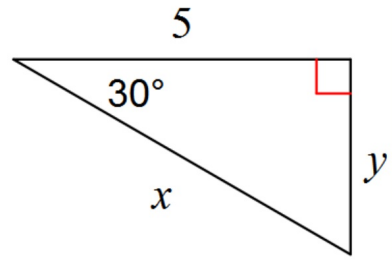
12)



Unit 4: Radicals and Special Right Triangles

Find the missing side lengths. Leave your answers as radicals in simplest form.

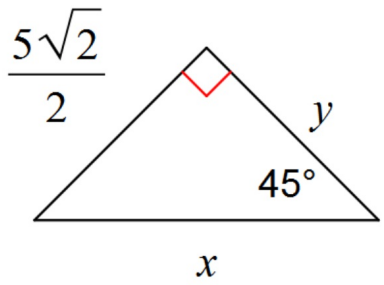
13)



Unit 4: Radicals and Special Right Triangles

Find the missing side lengths. Leave your answers as radicals in simplest form.

14)



Unit 4: Radicals and Special Right Triangles

Short answers to 1 - 14

1) $\{0.8\}$
2) $\{12\}$
3) $5\sqrt{6}$
4) 16
5) $6\sqrt{2}$
6) $10\sqrt{3}$
7) $x=4,\ y=2$
8) $a=7,\ b=\frac{7\sqrt{3}}{2}$
9) $a=4\sqrt{2},\ b=4$
10) $u=2,\ v=\sqrt{2}$
11) $x=3\sqrt{6},\ y=3\sqrt{3}$
12) $x=5,\ y=5$
13) $x=\frac{10\sqrt{3}}{3},\ y=\frac{5\sqrt{3}}{3}$
14) $x=5,\ y=\frac{5\sqrt{2}}{2}$

Unit 5: Exponents

Simplify. Your answer should contain only positive exponents.

31) $3 \cdot 3^3$

30) $4^2 \cdot 4^2 \cdot 4^3$

Unit 5: Exponents

Simplify. Your answer should contain only positive exponents.

32) $2 \cdot \left(2^3\right)^4$

33) $\dfrac{3x^3 \cdot 4x}{4x}$

Unit 5: Exponents

Simplify. Your answer should contain only positive exponents.

34) $\dfrac{(2x)^{-2}}{2x^4}$

35) $\dfrac{2k^2}{(2k^3)^3}$

Unit 5: Exponents

Simplify. Your answer should contain only positive exponents.

36) $3y^{-3} \cdot x^4y^2 \cdot 4x^{-2}y^4$

Unit 5: Exponents

Simplify. Your answer should contain only positive exponents.

37) $2y^{-1} \cdot x^{-2}y^{2}$

Unit 5: Exponents

Simplify. Your answer should contain only positive exponents.

38) $\dfrac{\left(2ba^2 \cdot 2a^4b^{-2}\right)^{-3}}{b^4}$

Unit 5: Exponents

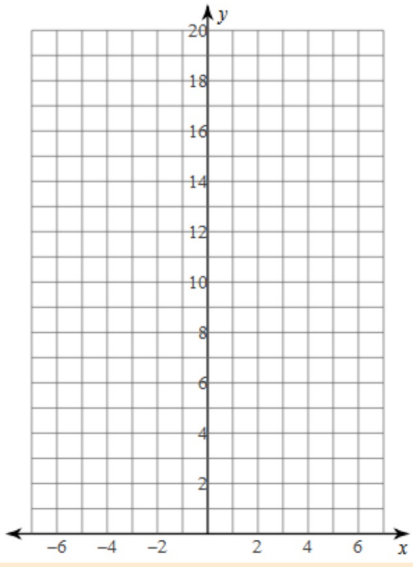
Simplify. Your answer should contain only positive exponents.

39) $\dfrac{\left(m^{-2}\right)^{-1}}{m^{-2} \cdot m^{2} n^{-4}}$

Unit 5: Exponents

Sketch the graph of each function.

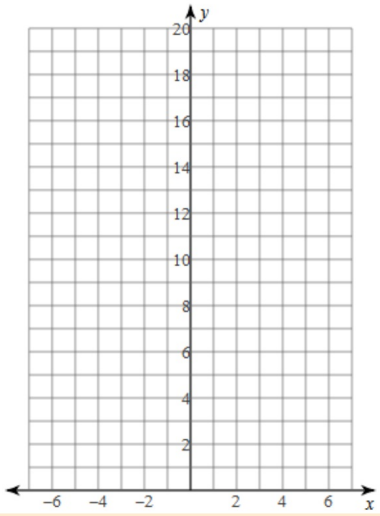
40) $y = 2^x$



Unit 5: Exponents

Sketch the graph of each function.

41) $y = 3 \cdot \left(\frac{1}{2}\right)^x$



Unit 5: Exponents

Simplify. Your answer should contain only positive exponents with no fractional exponents in the denominator.

42) $3n \cdot 4m^{-\frac{1}{2}} n^{\frac{1}{3}}$

Unit 5: Exponents

Simplify. Your answer should contain only positive exponents with no fractional exponents in the denominator.

43) $3yx^{\frac{2}{3}} \cdot 2x^{\frac{3}{2}}y^{-\frac{1}{2}}$

Unit 5: Exponents

Short answers to 30 - 43

29) 21.1 mi

30) 4^7

31) 3^4

32) 2^{13}

33) $3x^3$

34) $\frac{1}{8x^6}$

35) $\frac{1}{4k^7}$

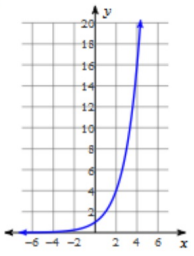
36) $12x^2y^3$

37) $\frac{2y}{x^2}$

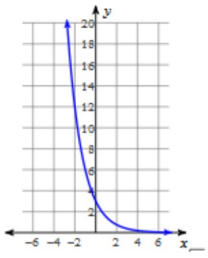
38) $\frac{1}{64a^{18}b}$

39) n^4m^2

40)



41)



42) $\frac{12m^{\frac{1}{2}}n^{\frac{4}{3}}}{m}$

43) $6y^{\frac{1}{2}}x^{\frac{13}{6}}$

Unit 6: Quadratics

Solve the quadratic equations.

44) $10r^2 + 6 = 366$

Unit 6: Quadratics

Solve the quadratic equations.

45) $3v^2 + 4 = 13$

Unit 6: Quadratics

Solve the quadratic equations.

46) $n^2 + 9n + 18 = 0$

Unit 6: Quadratics

Solve the quadratic equations.

47) $n^2 + 2n - 24 = 0$

Unit 6: Quadratics

Solve the quadratic equations.

48) $m^2 + 4m - 32 = 0$

Unit 6: Quadratics

Solve the quadratic equations.

49) $n^2 - 49 = 0$

Unit 6: Quadratics

Solve the quadratic equations.

50) $n^2 = -24 - 10n$

Unit 6: Quadratics

Solve the quadratic equations.

51) $a^2 + 40 = 13a$

Unit 6: Quadratics

Solve the quadratic equations.

52) $2m^2 = 21$

Unit 6: Quadratics

Solve the quadratic equations.

53) $5n^2 + 9n = 2$

Unit 6: Quadratics

Solve the quadratic equations.

54) $3a^2 = 24$

Unit 6: Quadratics

Solve the quadratic equations.

55) $4r^2 - 77 = -8r$

Unit 6: Quadratics

Solve the quadratic equations.

55) $4r^2 - 77 = -8r$

Unit 6: Quadratics

Solve the quadratic equations.

56) $2v^2 + 2v = 5$

Unit 6: Quadratics

Solve the quadratic equations.

57) $9v^2 + 7 = -11v$

Unit 6: Quadratics

Solve the quadratic equations.

58) $2m^2 + 5m = -2$

Unit 6: Quadratics

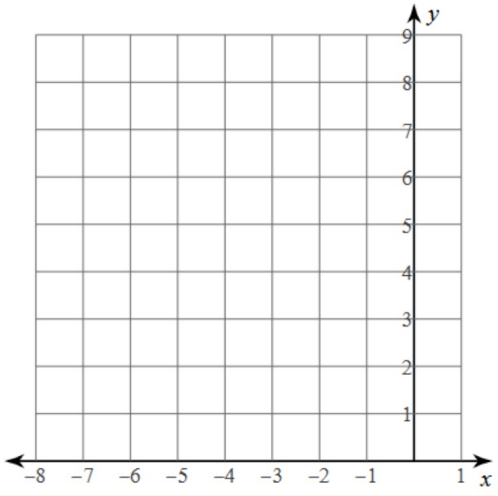
Solve the quadratic equations.

59) $12a^2 = -8$

Unit 6: Quadratics

Sketch the graph of each function.

60) $y = x^2 + 8x + 20$



Unit 6: Quadratics

Short answers to 44 - 60

43) $6y^{\frac{1}{2}}x^{\frac{13}{6}}$

44) $\{6, -6\}$

45) $\{\sqrt{3}, -\sqrt{3}\}$

46) $\{-6, -3\}$

47) $\{-6, 4\}$

48) $\{4, -8\}$

49) $\{7, -7\}$

50) $\{-4, -6\}$

51) $\{8, 5\}$

52) $\left\{\frac{\sqrt{42}}{2}, -\frac{\sqrt{42}}{2}\right\}$

53) $\left\{\frac{1}{5}, -2\right\}$

54) $\{2\sqrt{2}, -2\sqrt{2}\}$

55) $\left\{\frac{7}{2}, -\frac{11}{2}\right\}$

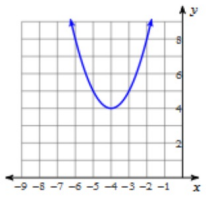
56) $\left\{\frac{-1+\sqrt{11}}{2}, \frac{-1-\sqrt{11}}{2}\right\}$

57) $\left\{\frac{-11+i\sqrt{131}}{18}, \frac{-11-i\sqrt{131}}{18}\right\}$

58) $\left\{-\frac{1}{2}, -2\right\}$

59) $\left\{\frac{i\sqrt{6}}{3}, -\frac{i\sqrt{6}}{3}\right\}$

60)



Exercises...

*** Study for finals!