

KEY

Honors Math 2 Cumulative Review after Unit 4B Test

For exercises 1-4, A is between B and C and AC = 5.

1) If AB = 4, what is BC?

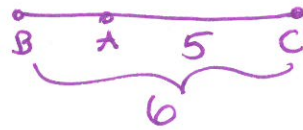


$$BC = 4 + 5$$

$$BC = AB + AC$$

BC = 9

2) If BC = 6, what is AB?



$$AB + AC = BC$$

$$AB + 5 = 6$$

AB = 1

3) If A is the midpoint of BC, what is AB?



AB = 5

4) If AB = 2(AC), what is AB?



$$AB = 2(AC)$$

$$AB = 2(5)$$

AB = 10

For exercises 5-7, simplify completely.

5) $\frac{4ab^2c^{-1}}{(ab^{-2}c^3)^4}$

$$\frac{4ab^2c^{-1}}{a^4b^{-8}c^{12}}$$

$$4a^{-3}b^{10}c^{-13}$$

$\frac{4b^{10}}{a^3c^{13}}$

6) $\sqrt[3]{12x^4} \cdot \sqrt[3]{180x}$

$$6 \times \sqrt[3]{10x^2}$$

$$x \sqrt[3]{12x} \cdot x \sqrt[3]{180x}$$

$$x \sqrt[3]{12 \cdot 180x^2}$$

$$x \sqrt[3]{2 \cdot 2 \cdot 3 \cdot 3 \cdot 3 \cdot 20x^2}$$

$$3x \sqrt[3]{2 \cdot 2 \cdot 2 \cdot 5x^2}$$

7) $\frac{\sqrt{135x^4}}{\sqrt{20}} = \frac{x^2\sqrt{9 \cdot 15}}{2\sqrt{5}}$

$$\frac{3x^2\sqrt{15} \cdot \sqrt{5}}{2\sqrt{5} \cdot \sqrt{5}}$$

$$3x^2\sqrt{75} = 3x^2 \cdot 5\sqrt{3}$$

$$\frac{15x^2\sqrt{3}}{10} = \frac{3x^2\sqrt{3}}{2}$$

8) Which point lies in the solution set for the system: $2y - x \geq -6$

$$2y < 3x - 6$$

$$y < \frac{3}{2}x - 3$$

$$2y - 3x < -6$$

$$2y \geq x - 6$$

$$y \geq \frac{1}{2}x - 3$$

A. (-4, -1)

B. (3, 1)

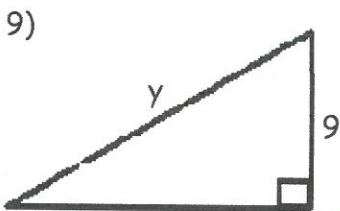
C. (0, -3)

D. (4, 3)

not in solution area (= overlap area)

not in there due to dashed line

Find the value of the variables. Give exact answers! (Hint: Pythagorean Theorem! ☺)

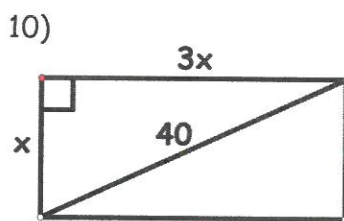


$$12^2 + 9^2 = y^2$$

$$144 + 81 = y^2$$

$$225 = y^2$$

y = 15

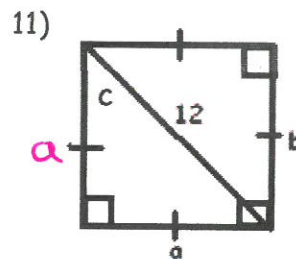


$$x^2 + (3x)^2 = 40^2$$

$$x^2 + 9x^2 = 1600$$

$$10x^2 = 1600$$

$$x^2 = 160$$



$$c + c + 90 = 180$$

$$2c = 90$$

c = 45°

$$a = b$$

$$a^2 + a^2 = 12^2$$

$$2a^2 = 144$$

$$a^2 = 72$$

Solve. 12.

$$\frac{x}{x+24} = \frac{2}{x}$$

*cross multiply

Excluded values $x \neq 0, 24$ *check for excluded values

$$x^2 = 2(x+24)$$

*be sure to distribute!

$$x^2 = 2x + 48$$

$$x^2 - 2x - 48 = 0$$

$$(x-8)(x+6) = 0$$

x = 8, -6 ✓ not an excluded value

13.

$$\frac{m}{m+9} = \frac{9}{m+9} + 2$$

*multiply by LCD Since it's NOT just fraction = fraction

$$\frac{m(m+9)}{m+9} = \frac{9(m+9)}{m+9} + 2(m+9)$$

$$m = 9 + 2(m+9)$$

$$m = 9 + 2m + 18$$

$$m = 2m + 27$$

-27 = m ✓ not an excluded value

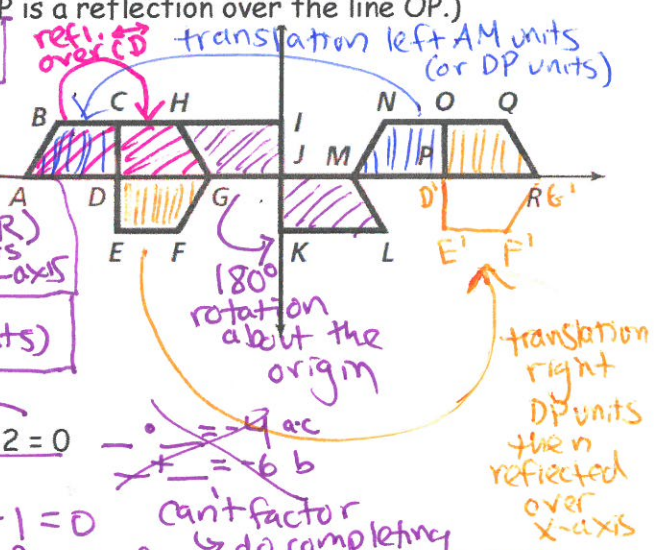
State whether each mapping is a reflection, rotation, translation, or glide reflection. Specifically describe each transformation. (Example: $\triangle MNOP \rightarrow \triangle RQOP$ is a reflection over the line OP .)

14. $\triangle ABCD \rightarrow \triangle GHCD$ Reflection across \overline{CD}

15. $\triangle HGJI \rightarrow \triangle LMJK$ Rotation 180° about the origin

16. $\triangle GFED \rightarrow \triangle RQOP$ Glide reflection with translation PD units (or 6R units) and reflection over x-axis

17. $\triangle MNOP \rightarrow \triangle ABCD$ Translated left AM units (or DP units)



Solve using the appropriate method. Give exact answer(s).

18) $-36 = 3m^2 - 31m$

$0 = 3m^2 - 31m + 36$

$0 = 3m^2 - 4m - 27m + 36$

$0 = m(3m - 4) - 9(3m - 4)$

$0 = (m - 9)(3m - 4)$

$-4 \cdot 27 = 108$
 $(3 \cdot 36)$

$-4 + 27 = -31$

$m = 9, \frac{4}{3}$

19) $2x^2 - 6x - 2 = 0$

$x^2 - 3x - 1 = 0$

$x^2 - 3x + \frac{9}{4} = 1 + \frac{9}{4}$

$(x - \frac{3}{2})^2 = \frac{13}{4}$

$x - \frac{3}{2} = \pm \frac{\sqrt{13}}{2}$

$x = \frac{3 \pm \sqrt{13}}{2}$

can't factor
do completing square or quadratic formula
 $x = \frac{3 \pm \sqrt{(3)^2 - 4 \cdot 1 \cdot -1}}{2(1)}$
 $x = \frac{3 \pm \sqrt{13}}{2}$

20) Solve $(\sqrt{x+14})^2 = (x-16)^2$

$x+14 = (x-16)(x-16)$

$x+14 = x^2 - 32x + 256$

$0 = x^2 - 33x + 242$

$0 = (x-11)(x-22)$

21) Which is the inverse of the function $f(x) = x - 5$?

A. $f^{-1}(x) = \frac{1}{x+5}$

B. $f^{-1}(x) = x + 5$

C. $f^{-1}(x) = 5 - x$

D. $f^{-1}(x) = \frac{1}{x-5}$

symbol is -1
y or f⁻¹(x)
 $y = x - 5$
 $x = y - 5$
 $x + 5 = y^{-1} = f^{-1}(x)$

22) Find the discriminant to determine the number and nature of the roots. $2x^2 + 3x = 5$

A. Two real rational roots

B. One real rational root

C. Two imaginary roots

D. Two real irrational roots

$2x^2 + 3x - 5 = 0$
discriminant $= (3)^2 - 4(2)(-5)$
 $= b^2 - 4ac = 9 + 40$

23) In which direction is the graph of $f(x) = \frac{3}{x+b}$ translated when b increases?

A. down
B. up
C. right

D. left

$y = \frac{3}{x}$ vs $y = \frac{3}{x+2}$
 $y = \frac{3}{x+2}$ vs $y = \frac{3}{x+5}$

24) Write the function so it would be easier to graph. Then, indicate how it's changed from the parent graph. $f(x) = \sqrt{4x-28}$

$f(x) = \sqrt{4(x-7)}$

$f(x) = \sqrt{4}\sqrt{x-7}$

$f(x) = 2\sqrt{x-7}$

vertical stretch by 2 and vertex is translated right 7

25) In building a brick wall, the amount of time it takes to complete the wall varies directly with the number of bricks in the wall and varies inversely with the number of bricklayers that are working together. A wall containing 1200 bricks, using 3 bricklayers, takes 18 hours to build. How long would it take to build a wall of 4500 bricks if 5 bricklayers worked on it?

let # bricks = b
bricklayer people = p
hours = t

$t = \frac{Kb}{p}$
 $18 = \frac{K(1200)}{3}$
 $54 = 1200K$
 $K = \frac{54}{1200} = \frac{9}{200}$

use to find K, the constant of variation BEFORE answering the question!
 $t = \frac{0.045b}{p}$
 $t = \frac{0.045(4500)}{5}$
 $t = 40.5$ hrs