EOC Review Skills #6 NO WORK=NO CREDIT Name: Key Per: Date:

1. Rewrite $f(x) = 2x^2 + 4x - 16$ in
a) Intercept form. Identify the x-intercepts p and q.

$2(x^2+2x-8)$
$f(x) = 2(x+4)(x-2)$
$x = -4, 2$

$y = a(x-h)^2+k$

b) Vertex form. Identify the vertex and the AOS. Find the y-intercept.

$-4/2(2) = (-1)$ $2-4-16 = (-18)$
V: $(-1, -18)$
$y = 2(x+1)^2 - 18$
AOS: $x = -1$
y int: $(0, -16)$

2. What are the zeros of $f(x) = (x^2 + 2x - 8)(x - 6)$

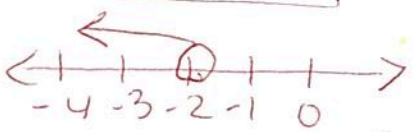
$f(x) = (x+4)(x-2)(x-6)$
$x = -4, 2, 6$
(take opp)

3. What are the x-intercepts of $f(x) = 2x^2 - x - 10$

$0 = (2x-5)(x+2)$
$x = 5/2, -2$
x int → let $y = 0$
$(5/2, 0)$ & $(-2, 0)$

4. Solve $x - (4x - 5) > 11$ and graph the solution on a number line. Express answer in set and interval notation.

$x - (4x-5) > 11$
$x - 4x + 5 > 11$
$-5 \quad -5$
$-3x > 6$
$-3 \quad -3$
$x < -2$

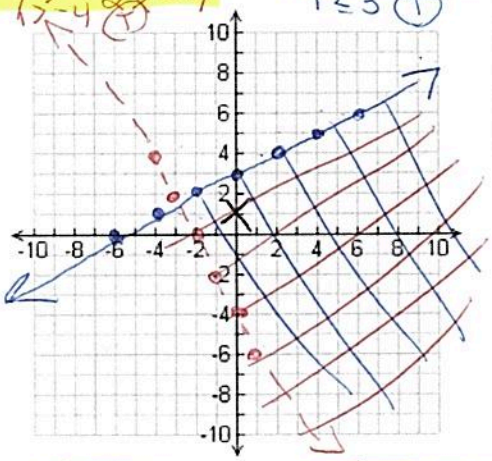


$\{x | x < -2\}$ $(-\infty, -2)$

5. Graph the system of linear inequalities. Give two ordered pairs that are solutions and two that are not.

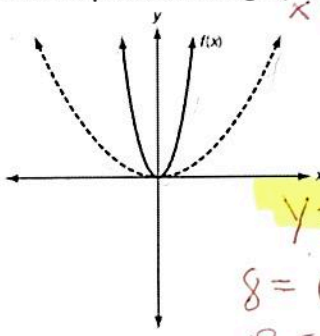
$\begin{cases} -x + 2y \le 6 \\ 2x + y > -4 \end{cases}$

$\frac{2y}{2} \le \frac{x+6}{2}$ $y \le 1/2x + 3$ (T)
$y > -2x - 4$ (T)



Sol: $(0,1)$ $(3,3)$ Non-Sol: $(-2,-2)$ $(-4,0)$

6. On the graph below, $f(x) = x^2$. Write a function to represent the dotted graph given that it passes through (-4, 8)?



$y = ax^2$
$8 = a(-4^2)$
$\frac{8}{16} = \frac{16a}{16}$
$1/2 = a$
$y = 1/2x^2$

7. The function $f(x) = 58(1 - 0.1)^x$ represents the value of a book, in dollars, x years after 2017.
a) What does 0.1 represent?
rate of decrease $.1 \to 10\%$

b) What does 58 represent?
y intercept / Value of book in 2017

c) Is this an example of exponential growth or decay? Explain.
Decay $(1 - .1)$

8. Let $m(x) = 4x - 5$. HI
a) The function m(x) is translated 4 units to the right to create p(x). What is p(x)?

$4(x-4) - 5$
$4x - 16 - 5$
$P(x) = 4x - 21$

b) The function m(x) is translated 8 units up to create q(x). What is q(x)?

$4x - 5 + 8$
VO
$q(x) = 4x + 3$

9. The value of a car is $18,000 and is depreciating at a rate of 12% per year. Write a function to model this case, then find the value of the car 10 years after purchased.

$f(x) = 18{,}000 - (1 - .12)^x$
$f(x) = 18{,}000(.88)^{10}$
$= \$5013.02$

10. If the slope of a line is 2/5, what will be the slope of a line that is perpendicular to it?

$-5/2$ (Neg Recip)

11. Let $f(x) = x^2 - 4$, What is the average rate of change in the interval $[-4, -1]$?

$\frac{f(b) - f(a)}{b - a}$
$a \quad b$
$\frac{-3 - 12}{-1 + 4} = \frac{-15}{3} = -5$
ARC

12. Factor $2x^2 - 50$

$2(x^2 - 25)$
$2(x+5)(x-5)$

13. Rewrite in vertex form
$f(x) = 2x^2 + 6x - 8$

$\frac{-b}{2a}$

$\frac{-6}{2(2)} = -\frac{3}{2}$ V: $(-\frac{3}{2}, -\frac{25}{2})$

$2(\frac{9}{4}) + 6(-\frac{3}{2}) - 8$

$\frac{9}{2} + -9 - 8 = -\frac{25}{2}$

$y = 2(x + \frac{3}{2})^2 - \frac{25}{2}$

$y = a(x-h)^2 + k$

14. Simplify

a. $(\sqrt[8]{m})^4$ $m^{4/8} = m^{1/2}$ or $\sqrt{m}$

b. $27^{4/3}$ $(\sqrt[3]{27})^4 = 3^4 = 81$

c. $-8^0 = -1$ * $(-8)^0 = 1$ *

d. $(4\sqrt{5})^2$

$(4\sqrt{5})(4\sqrt{5}) = 16\sqrt{25}$

80

15. A theater sells admission tickets for $9 on Monday nights. At capacity, the theater holds 100 customers. The function $M(n) = 9n$, represents the amount of money the theater takes in on Monday nights, where n is the number of customers. What is the domain of M(n) in this context?

a. all whole numbers. D: $0 \le n \le 100$

b. all non-negative rational numbers.

c. all non-negative integers that are multiples of 9.

(d.) all non-negative integers less than or equal to 100.

16. Tina wants to print some pictures. $P(x) = 1.5x$, represents the cost, in dollars, of printing x pictures. She has $135. What is the minimum and maximum domain? What does this represent?

$\frac{135}{1.5} = \frac{1.5x}{1.5}$

$90 = x$ Max

$0 = x$ Min

*0 is min # of pictures she can print

*90 is max # of pics.

17. Find the intercepts and graph using the intercepts. $5y - 3x = -15$

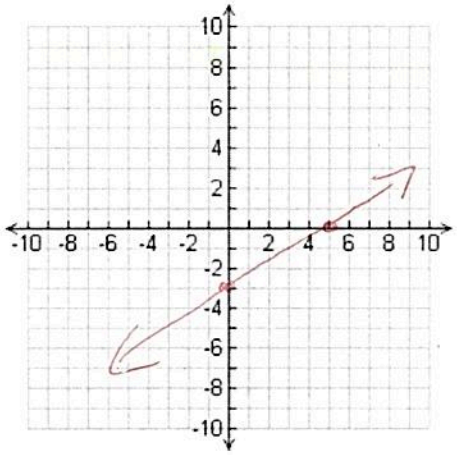
$5y = -15$

$y = -3$ (0, -3)

$-3x = -15$

$x = 5$

(5, 0)



18. Solve

a. $4x - (3x + 7) = 15 - 2x$

$4x - 3x - 7 = 15 - 2x$

$x - 7 = 15 - 2x$

$+2x \quad +7 \quad +2x$

$\frac{3x}{3} = \frac{22}{3}$ $x = 22/3$

b. $24x^2 + 96 = 0$

$-96 \quad -96$

$\frac{24x^2}{24} = \frac{-96}{24}$ $x^2 = -4$ $\emptyset$

c. $x^2 - 12x = -35$

$+35 \quad +35$

$x^2 - 12x + 35 = 0$

$(x - 7)(x - 5) = 0$

$x = 7, 5$

19. The total cost C, a catering company charges for x number of guests, is represented by $C(x) = 18x + 200$. Identify the slope, y-intercept, and describe their meanings in terms of this context.

m = 18 cost per person

yint = 200 (service fee)

20. Mary and Julia went to Cinemax. Mary bought 3 popcorn buckets and 2 small drinks, and she paid $21. Julia bought 2 popcorn buckets and 4 small drinks, and she paid $22. Write and solve a system of equations to find the cost of a popcorn bucket and a small drink.

x = popcorn

y = drinks

$-2(3x + 2y = 21)$

$2x + 4y = 22$

$-6x - 4y = -42$

$-4x = -20$

$x = 5$

$\$5$ popcorn

$2x + 4y = 22$

$-10 \quad -10$

$4y = 12$ $y = 3$

$\$3$ drinks

21. The height in feet of a golf ball that is hit from the ground can be modeled by $f(x) = -16x^2 + 64x$, where x is the time in seconds after the ball is hit. Find the ball's maximum height and the time it takes the ball to reach this height. Then find how long the ball is in the air.

$x = \frac{-b}{2a}$

$\frac{-64}{2(-16)} = 2$

V: (2, 64)

$-16(4) + 64(2)$

$-64 + 128 = 64$

Time it takes: 2 sec (x value)

Max Height: 64 ft (y value)

Total Time in Air: 4 sec (double the x)