# REGENTS REVIEW PACKET #4

Created for you by Ms. Nhotsoubanh

1.) If $A = 4x^2 + 5x - 8$ and $B = -2x^2 - 4x + 6$, what is the difference of A and B equals

$(4x^2+5x-8) - (-2x^2-4x+6)$

$4x^2+5x-8$

$+2x^2+4x-6$

$6x^2+9x-14$

2.) What is the value of x that satisfies the equation:

$$\frac{7}{3}\left(x+\frac{9}{28}\right)=20$$

Clear den.

$\frac{7}{3}\left(x+\frac{9}{28}\right)=20$

$12\left[\frac{7}{3}x+\frac{3}{4}=\frac{20}{1}\right]$

$28x+9=240$

$-9 \quad -9$

$\frac{28x}{28}=\frac{231}{28}$

$x=8.25$

or

$\frac{7}{3}x+0.75=20$

$-0.75 \quad -0.75$

$\frac{7}{3}x=19.25$

$\frac{\frac{7}{3}}{\frac{7}{3}}x=\frac{19.25}{\frac{7}{3}}$

$x=8.25$

**NAME:** _____

**DATE: MAY 14 - ALGEBRA 1 H** **DUE 5/16**

3.) The table below shows the average yearly balance in a savings account where interest is compounded annually. No money is deposited or withdrawn after the initial amount is deposited.

| Year | Balance, in Dollars |
|---|---|
| 0 | 380.00 |
| 10 | 562.49 |
| 20 | 832.63 |
| 30 | 1232.49 |
| 40 | 1824.39 |
| 50 | 2700.54 |

Which type of function best models the given data?

(1) linear function with a negative rate of change

(2) linear function with a positive rate of change

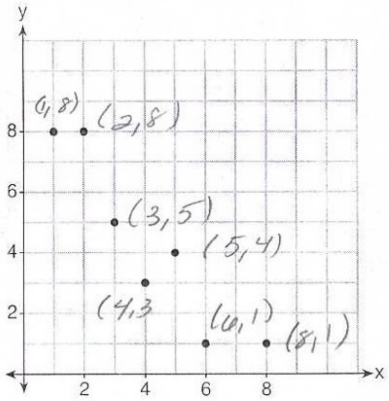
(3) exponential decay function

(4) exponential growth function

4.) What is the correlation coefficient of the linear fit of the data shown below, to the nearest hundredth?

r = -0.93

| $L_1$ | $L_2$ |
|---|---|
| 1 | 8 |
| 2 | 8 |
| 3 | 5 |
| 4 | 3 |
| 5 | 4 |
| 6 | 1 |
| 8 | 1 |

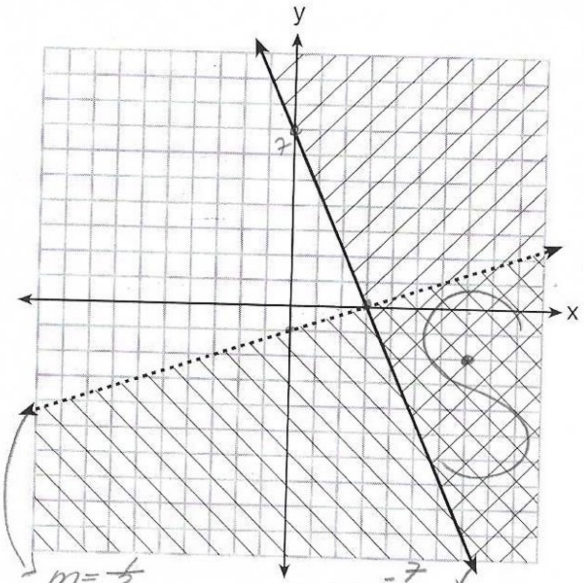



Write the equation for the line of best fit for the data shown in the above, to the nearest thousandth.

$y = -1.127x + 8.955$



5.) Write a system of inequalities graphed below. Explain how you got your answer.




$m = \frac{1}{3}$ | $m = -\frac{7}{3}$

$b = -1$ | $b = 7$

$<$ dotted ↓ | $\geq$ solid ↑

$y < \frac{1}{3}x - 1$ | $y \geq -\frac{7}{3}x + 7$

Found the slope & y-intercept of each. Dotted line & shade below is $<$.

State one point that lies in the solution set of the system of inequalities graphed above.

any point inside the (S) solution set

(7, -2)

* solid line & shade above is $\geq$.

6.) A student was given the equation $x^2 + 6x - 13 = 0$ to solve by completing the square. The first step that was written is shown below.

means vertex form / get vertex

$x^2 + 6x = 13$

vertex $(-3, -22)$

The next step in the student's process was $x^2 + 6x + c = 13 + c$.

State the value of c that creates a perfect square trinomial.

$x^2 + 6x + \boxed{9} = 13 + \boxed{9}$ $\left(\frac{b}{2}\right)^2 = \left(\frac{6}{2}\right)^2$

$(x+3)^2 = 22$ $= (3)^2$

$= \boxed{9}$

or

$x^2 + 6x + \boxed{9} = 13 + \boxed{9}$

$(x+3)^2 = 22$

start w/ vertex form → $(x+3)^2 - 22 = 0$ ↑ then go backwards

$22 = 13 + \square$

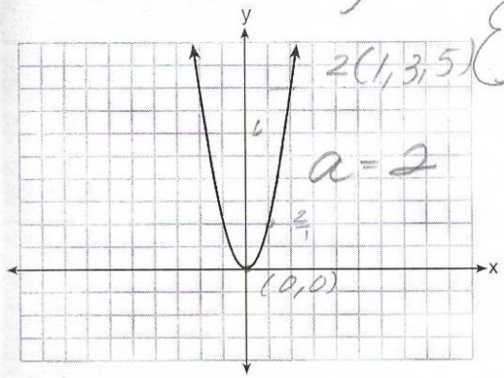
Explain how the value of c is determined.

Take half of the middle term (b) and square it.

$\left(\frac{6}{2}\right)^2 = (3)^2 = \boxed{9}$

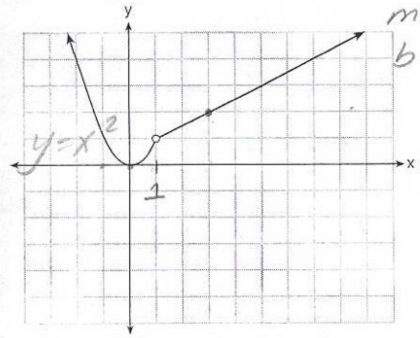
7.) What is the equation of the quadratic shown in the graph below? Hint: create a table.

$y = a(x-0)^2 + 0$




$y = 2x^2$

8.) What is the equation of the piecewise function shown in the graph below? Show your work or explain how you got your equation.




$m = \frac{1}{2}$ $y = \frac{1}{2}x + \frac{1}{2}$

$b = \frac{1}{2}$

$$f(x) = \begin{cases} x^2, & x < 1 \\ \frac{1}{2}x + \frac{1}{2}, & x \geq 1 \end{cases}$$

or the domain can be $x \leq 1$ $x > 1$

9.) Write an equation that defines $m(x)$ as a trinomial where $m(x) = (3x - 1)(3 - x) + 4x^2 + 19$.

$m(x) = 3x(3-x) - 1(3-x) + 4x^2 + 19$

$m(x) = 9x - 3x^2 - 3 + x + 4x^2 + 19$

$m(x) = x^2 + 10x + 16$

Solve for x when $m(x) = 0$.

$0 = x^2 + 10x + 16$

$0 = (x+8)(x+2)$

$x = -8 \quad | \quad x = -2$

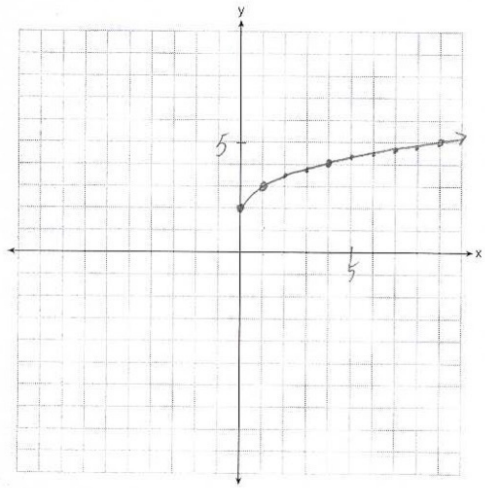
16

8 2

10

10.) Draw the graph of $y = \sqrt{x} + 2$ on the set of axes below.

| x | y |
|---|---|
| 0 | 2 |
| 1 | 3 |
| 2 | 3,4 |
| 3 | 3,7 |
| 4 | 4 |
| 5 | 4,2 |
| 6 | 4.4 |
| 7 | 4,6 |
| 8 | 4,8 |
| 9 | 5 |




11.) The breakdown of a sample of a chemical compound is represented by the function $p(t) = 300(0.5)t$, where $p(t)$ represents the number of milligrams of the substance and t represents the time, in years. In the function $p(t)$, explain what 0.5 and 300 represent.

$p(t) = 300(0.5)^t$

$A = P(1+r)^t$ (r: rate, P: initial)

300 → # of milligrams to start with

0.5 → the rate that it decrease