

HW 15: Practice Final Quiz BLC-150 [Answers at the end of this PDF.]

Part 1: This is essentially the diagnostic test you took as first-years.

1a) There are seven people in a room.
There ages are 22, 25, 25, 33, 34, 35, and 36
years old.

What was the average age?

1b) What's the median age?

2) A colony of 6000 mice lived under Notre
Dame. After the fire, their population
decreased by 25%. How many were there
after the fire?

3) Evaluate this fraction:

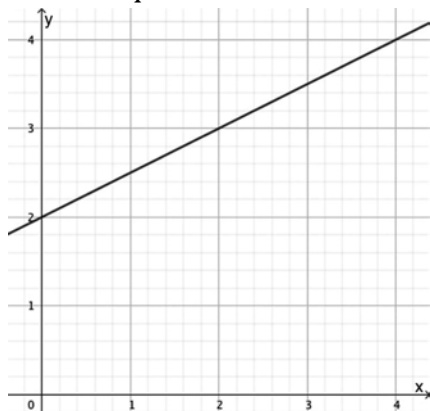
$$\frac{\frac{1}{4} + \frac{1}{2}}{3}$$

4) What is the slope of this line: $y = 3x + 7$

5) Convert 40° Fahrenheit to Celsius with the
provided formula.

$$C = \frac{5F - 160}{9}$$

6) What is the equation of this line?



7) Solve for x : $\frac{x}{3} - 2 = 5$

8) Solve for x : $2x + 3 = x + 7$

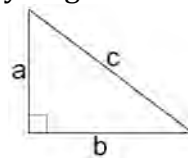
9) Solve for x : $\sqrt{x + 1} = 3$

10) Expand and simplify: $(x + 5)(x - 3)$
(FOIL it out and combine like terms.)

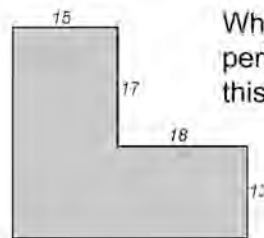
11) Solve for x : $7(x + 1) - 5(x + 2) = 9$

12)

In the following right triangle, $a = 9$ and $c = 15$. Use the Pythagorean Theorem to find b .

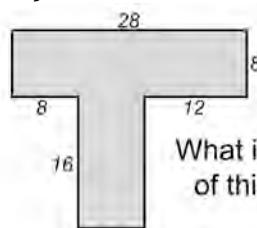


13)



What is the
perimeter of
this figure?

14)



What is the area
of this figure?

15)

The diameter of a circle is 6.
Find the area of this circle.
Choose the closest answer.

Hint: $A = \pi r^2$ and π is approximately $\frac{22}{7}$.

Part 2: This represents some of what we did in the last several classes.

If you are given 2 points: Find the slope using the Slope Equation:

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Then plug one of the points and the slope into the Point-Slope Equation and solve for y :

$$(y - y_1) = m(x - x_1)$$

This equation takes you straight to the $y = mx + b$ answer. E.g. $y = 3x + 4$

Alternatively you could find the slope and then plug one of the points into $y = mx + b$ and solve for b . Once you have determined b , you then have to rewrite the formula with x and y as unknown variables and plug in the slope and b with the numbers you found. E.g. $y = 3x + 4$

1) Given two points: $(-2, -1)$ and $(0, 1)$

a) First find the slope.

b) Find the equation for this line. Hint: Notice where $(0, 1)$ is.

c) Graph it.

2) $(-2, 1)$ and $(3, -1)$

a) First find the slope.

b) Find the equation for this line. Hint: Notice where $(0, 1)$ is.

c) Graph it.

3) $m = -2$ and $(-1, 2)$ Go straight to the point-slope formula and plug in the given information... solve for y .

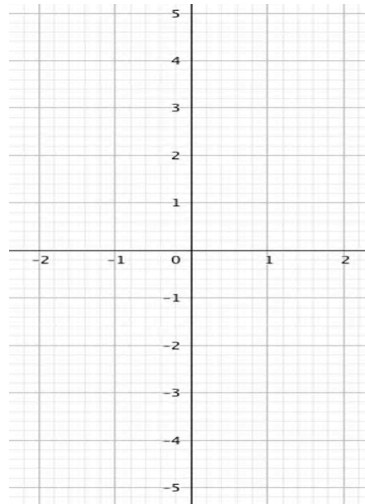
b) Find the equation for this line.

c) Graph it.

Quadratics: Find the y values for the given x values for each quadratic equation.

| | x | $y = x^2$ | $y = x^2 + 1$ | $y = x^2 - 1$ | $y = -x^2$ | $y = -x^2 + 1$ | $y = -x^2 - 1$ |
|----|--------------|-----------|---------------|---------------|------------|----------------|----------------|
| 4) | -2 | 4 | | | | | -5 |
| | -1 | | 2 | | -1 | | |
| | 0 | 0 | | | | | |
| | 1 | 1 | | 0 | | 0 | |
| | 2 | | | | | | |
| 5) | Happy or Sad | happy | | | | sad | |

Graph them all on this graph.



6)

Find the *y*-intercepts for the following quadratic equations. (Just make $x = 0$ and solve for y .)

7) $y = 2.5x^2 - 8$

8) $y = 9x^2 + 10.11$

9) $y = \pi x^2 - t$

10) $y = -11x^2 + 18$

Factor the following quadratic equations.

11) $x^2 + 3x + 2 =$

12) $x^2 + x - 2 =$

13) $x^2 - x - 12 =$

14) $x^2 + 5x + 6 =$

15) $x^2 - 7x + 10 =$

Part 1 Answers:

1a: 30

1b: 33

2: 4500

3: $\frac{1}{4}$

4: 3

5: 5°C

6: $y = \frac{x}{2} + 2$

7: 21

8: 4

9: 8

10: $x^2 + 2x - 15$

11: 6

12: 12

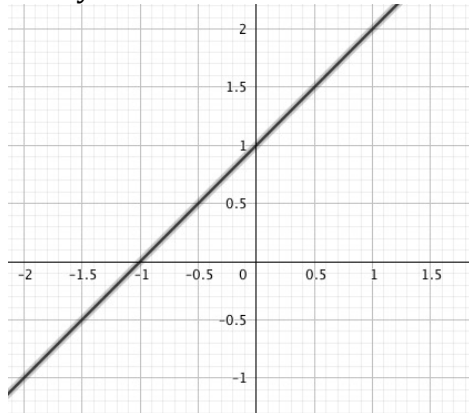
13: 126

14: 352

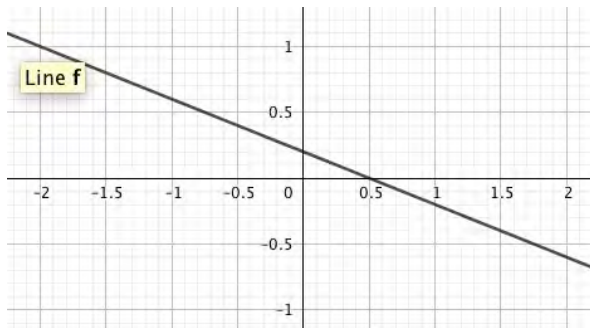
15: about 28.3

Part 2 Answers

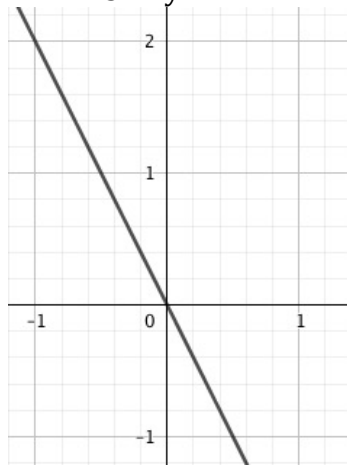
1: $y = x + 1$



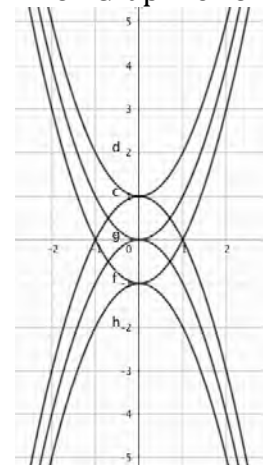
2: $y = -(2/5)x + 1/5$



3: $y = -2x$



6: Graph for 6.



| | x | $y = x^2$ | $y = x^2 + 1$ | $y = x^2 - 1$ | $y = -x^2$ | $y = -x^2 + 1$ | $y = -x^2 - 1$ |
|----|-----|--------------|---------------|---------------|------------|----------------|----------------|
| 4) | -2 | 4 | 5 | 3 | -4 | -3 | -5 |
| | -1 | 1 | 2 | 0 | -1 | 0 | -2 |
| | 0 | 0 | 1 | -1 | 0 | 1 | -1 |
| | 1 | 1 | 2 | 0 | -1 | 0 | -2 |
| | 2 | 4 | 5 | 3 | -4 | -3 | -5 |
| | 5) | Happy or Sad | happy | happy | happy | sad | sad |

7: (0, -8)

8: (0, 10.11)

9: (0, -t)

10: (0, 18)

11: $x^2 + 3x + 2 = (x+1)(x+2)$

12: $x^2 + x - 2 = (x-1)(x+2)$

13: $x^2 - x - 12 = (x+3)(x-4)$

14: $x^2 + 5x + 6 = (x+3)(x+2)$

15: $x^2 - 7x + 10 = (x-2)(x-5)$