

Today's Objectives:

Review for Quarter 1 Final

4)

56 ft/sec

$$\frac{y-y}{x-x} \quad \frac{ft}{sec}$$

1. Simplify.

$$3x^2 + 6x - (x + 5)$$

$$3x^2 + 6x - x - 5$$

$$3x^2 + 5x - 5$$

2. Find the product.

$$(6x + 1)(4x - 3)$$

$$24x^2 - 14x - 3$$

$$\begin{array}{r} 4x - 3 \\ 6x \phantom{+ 1} \\ + 1 \phantom{+ 1} \\ \hline \end{array} \begin{array}{|l} 24x^2 - 18x \\ 4x - 3 \\ \hline \end{array}$$

3. Simplify.  $(2xy^6)^3 = 2^3 x^3 (y^6)^3$

$$= \boxed{8x^3 y^{18}}$$

4. Simplify.  $\left(\frac{3x^7}{5}\right)^2 = \frac{3^2 (x^7)^2}{5^2} = \boxed{\frac{9x^{14}}{25}}$

5. Simplify.

$$5\sqrt{63} \cdot \sqrt{3^2} = 5 \cdot 3 \sqrt{7} = 15\sqrt{7}$$

Handwritten work for problem 5: The expression  $5\sqrt{63}$  is shown with a circled 5 and a circled 7. The 63 is broken down into 3 and 3, each circled. An arrow points from the circled 3s to the expression  $5 \cdot 3 \sqrt{7}$ . Another arrow points from the circled 5 to the final result  $15\sqrt{7}$ , which is circled.

6. Simplify.

$$(16x^{36})^{\frac{1}{2}} = 2 \cdot 2 x^{18} = 4x^{18}$$

$$\sqrt[2]{16x^{36}} = 4x^{18}$$

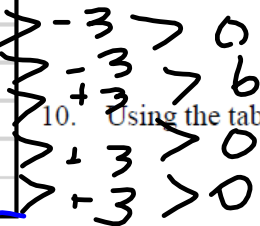
Handwritten work for problem 6: The expression  $(16x^{36})^{\frac{1}{2}}$  is shown with a circled 2 in the denominator of the exponent. Below it, the simplification  $2 \cdot 2 x^{18} = 4x^{18}$  is written in green, with  $4x^{18}$  circled. To the right, the expression  $\sqrt[2]{16x^{36}}$  is written in red. Below it, the prime factorization  $4x^{18}$  is shown in green, with 4 circled, 2 circled, 2 circled, and 2 circled.



WS 2-1

x	h(x)
-3	14
-2	11
-1	8
0	11
1	14
2	17

9. Using the table for  $h(x)$ , determine what type of function it is.



absolute value

10. Using the table for  $h(x)$ , what is the average rate of change on the interval  $[-3, 2]$ ?

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{17 - 14}{2 - (-3)} = \frac{3}{5}$$

Use for problems 9 & 10.

rise  
run

11. Describe the transformation of  $F(x) = \underline{-5(x-2)^2 + 1}$  compared with  $f(x) = x^2$  (2, 1)

- 1. shift right 2
- 2. shift up 1
- 3. flip over x-axis (up-down flip)

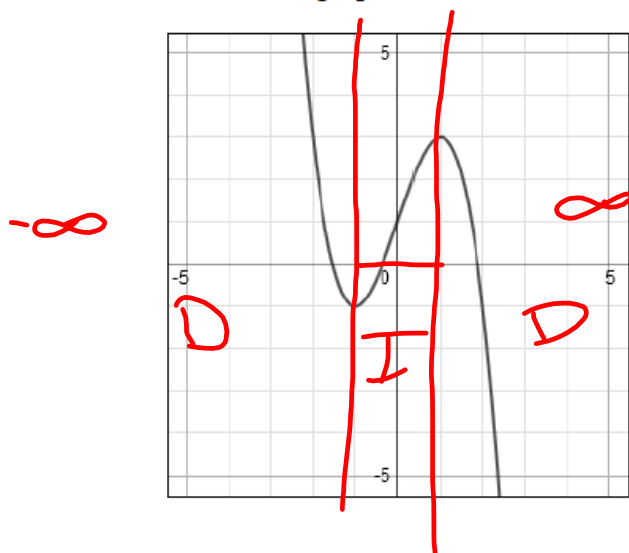
WS 2-2

12. Identify the vertex of the function.

$$g(x) = 2|x + 4|$$

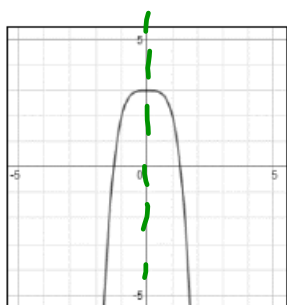
$$(-4, 0)$$

13. For the function graphed below, determine intervals of increasing and decreasing.

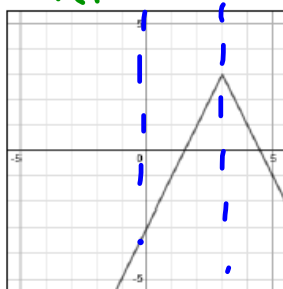


$$D: (-\infty, -1) \cup (1, \infty)$$
$$I: (-1, 1)$$

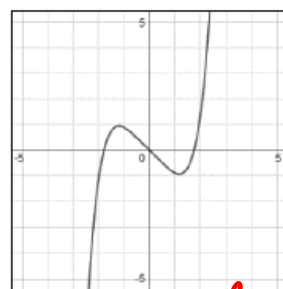
14. Label each function graph as <sup>rotate</sup> odd even or neither.   
~~reflect~~



even



neither



odd

A certain ice cream bar company has constructed the following function:  $P(x) = -400(x-2)^2 + 1600$ .  
 In this model,  $x$  is the price of an ice cream bar, and  $P(x)$  is the company's weekly profit.

15. At what **price** should the company sell each ice cream bar to earn a maximum weekly profit?   
 (2, 1600)

16. What is the company's maximum weekly profit?   
 \$2

\$1600

