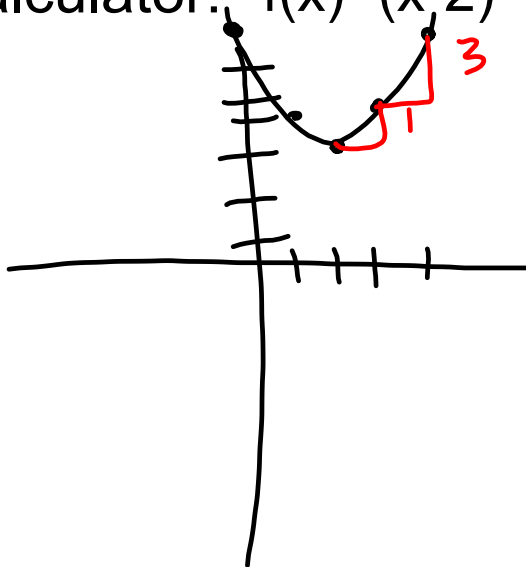


Bellwork:

Graph the following function without a calculator:  $f(x)=(x-2)^2+3$

(2, 3)

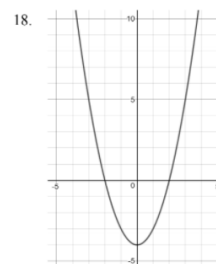
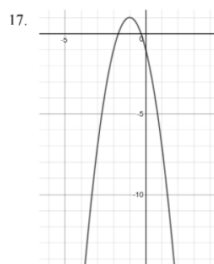
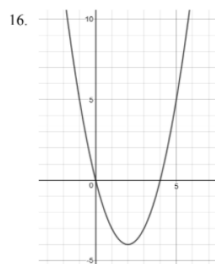


### Homework 3.1 Solutions

- 1. Q
- 2. Q
- 3. NQ
- 4. NQ
- 5. Q
- 6. Q

For the following answers, bold type is the **minimum response**; italicized type is *extra effort*.

	<u>x-intercept(s)</u>	<u>y-intercept</u>	<u>vertex</u>	<u>axis of symmetry</u>
7.	<i>(-2, 0) (4, 0)</i>	<b>(0, -8)</b>	<i>(1, -9)</i>	$x = 1$
8.	<i>(-10, 0) (2, 0)</i>	<b>(0, -20)</b>	<i>(-4, -36)</i>	$x = -4$
9.	<i>(-7, 0) (-1, 0)</i>	<b>(0, 14)</b>	<i>(-4, -18)</i>	$x = -4$
10.	<b>(-1, 0) (9, 0)</b>	<i>(0, 9)</i>	<i>(4, 25)</i>	$x = 4$
11.	<b>(-8, 0) (-7, 0)</b>	<i>(0, 56)</i>	<i>(-7.5, -0.25)</i>	$x = -7.5$
12.	<b>(2, 0) (10, 0)</b>	<i>(0, 60)</i>	<i>(6, -48)</i>	$x = 6$
13.	<b>(2, 0)</b>	<i>(0, 4)</i>	<b>(2, 0)</b>	$x = 2$
14.	<i>(-7, 0) (-5, 0)</i>	<i>(0, 35)</i>	<b>(-6, -1)</b>	$x = -6$
15.	<i>(1, 0) (7, 0)</i>	<i>(0, -7)</i>	<b>(4, 9)</b>	$x = 4$



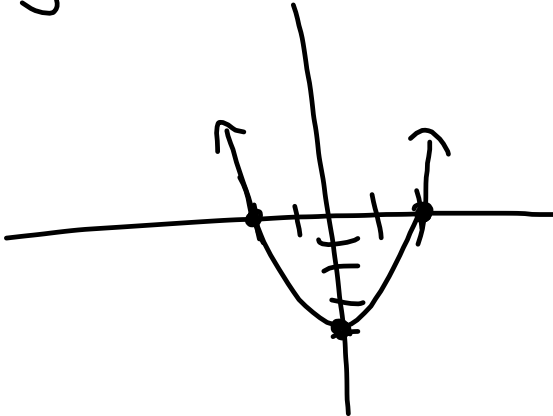
19. Vertex @ (250, 3); which, being interpreted, is that it costs an average of \$3 per spinner to produce 250 spinners.  
 y-intercept @ (0, 3128); which means it costs \$3128 to produce 0 fidget spinners. (or that \$3128 is the company's fixed cost)

$$f(x) = (x-2)(x+2)$$

---

$$y = (0-2)(0+2) = (-2)(2) = -4$$

$(2, 0)$   $(-2, 0)$   
 $(0, -4)$



### Lesson 3.2 Objectives:

I can factor greatest common factors from polynomials

I can factor difference of squares quadratics

$$3 \cdot 2 \cdot 3$$

$$9 \cdot 2 = 18$$

$$6 \cdot 3$$

$$\begin{array}{c} 18 \\ \swarrow \searrow \\ 6 \quad 3 \\ \swarrow \searrow \\ 3 \quad 2 \end{array}$$

**GREATEST COMMON FACTOR (GCF)**

For a polynomial, the GCF is the largest term that is a divisor of every term in the polynomial.

You can find this among the coefficients (numbers) first – find the largest number that will divide evenly (without remainder) into all the coefficients.

If a variable is in common among all terms, then it is part of the GCF. The degree of the variable in the GCF is equal to the lowest degree of that variable among the polynomial terms.

Find the GCF for each polynomial; then factor it out.

①  $6x^7 + 15x^3$

$$\begin{array}{r} 18 \\ \swarrow \searrow \\ 9 \quad 2 \\ \swarrow \searrow \\ 3 \quad 3 \end{array}$$

$$3x^3(2x^4 + 5)$$

②  $10x^7 + 5$

$$5(2x^7 + 1)$$

$$\textcircled{3.} \quad 4a^5b + 12a^3b + 22ab$$

$$2ab(2a^4 + 6a^2 + 11)$$

$$\textcircled{4.} \quad 50p^7q^4r + 30p^4q^2r + 10p^3q^4$$

$$10p^3q^2(5p^4q^2r + 3pr + 1q^2)$$

## DIFFERENCE OF SQUARES (QUADRATIC)

$$a^2 - b^2 = (a+b)(a-b)$$

$$x^2 - 36$$

$$(x+6)(x-6)$$

EXAMPLES:

$$x^2 - 36 = x^2 - 6^2 = (x+6)(x-6)$$

$$4x^2 - 49y^2 = (2x+7y)(2x-7y)$$

	$x$	
$x$	$x^2$	<del><math>6x</math></del>
$-6$	<del><math>-6x</math></del>	$-36$

$$4x^2 - 49y^2$$

$$(2x+7y)(2x-7y)$$

Factor using the difference of squares formula.

5.  $k^2 - 100$

$$(k+10)(k-10)$$

6.  $9x^2 - 25$   
 $\sqrt{9} = 3$   
 $\sqrt{25} = 5$

$$(3x+5)(3x-5)$$

	$3x + 5$	
$3x$	$9x^2$	$15x$
$-5$	$-15x$	$-25$

7.  $a^2 - 121b^2$   
 $\sqrt{121} = 11$

$$\sqrt{b^2} = b$$

$$\sqrt{a^2} = a$$

$$(a + 11b)(a - 11b)$$

$$6 = 3 \cdot 2$$

$$2 \cdot 3$$

8.  ~~$16g^2 - 81h^2$~~   $18x^2 - 8y^2$

$$2(9x^2 - 4y^2)$$

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