

Module 1 Test Review
 Secondary Math 2 Honors
 Quadratic Functions

Part I

Simplify the following expressions.

1) $(2x - 5) - (3x + 2)$
 $-x - 7$

2) $(x + 4) + (2x - 3)$
 $3x + 1$

3) $(x + 2)(6x - 4)$
 $6x^2 - 4x + 12x - 8$
 $(6x^2 + 8x - 8)$

4) $(3x - 2)(x + 4)$
 $3x^2 + 12x - 2x - 8$
 $(3x^2 + 10x - 8)$

5) $(3x - 2)(6x - 4)$
 $18x^2 - 12x - 12x + 8$
 $(18x^2 - 24x + 8)$

6) $(3x + 2) - (6x + 4)$
 $3x + 2 - 6x - 4$
 $(-3x - 2)$

7) $(x + 2)(x^2 - 6x - 4)$
 $x^3 - 6x^2 - 4x$
 $2x^2 - 12x - 8$

 $x^3 - 4x^2 - 16x - 8$

8) $(x^2 + 3x - 2)(6x - 4)$
 $6x^3 - 4x^2$
 $18x^2 - 12x$
 $-12x + 8$

 $(6x^3 + 14x^2 - 24x + 8)$

9) $(x + 4) + (2x - 3) - (4x + 1)$
 $3x + 1 - 4x - 1$
 $(-x)$

Evaluate the following functions for $f(-1)$, $f(0)$, $f(2)$, and $f(5)$.

10) $f(x) = -3x + 5$

$f(-1) = -3(-1) + 5 = 8$
 $f(0) = -3(0) + 5 = 5$
 $f(2) = -3(2) + 5 = -1$
 $f(5) = -3(5) + 5 = -10$

11) $f(x) = 3 \cdot 2^x$

$f(-1) = 3 \cdot 2^{-1} = \frac{3}{2}$
 $f(0) = 3 \cdot 2^0 = 3$
 $f(2) = 3 \cdot 2^2 = 12$
 $f(5) = 3 \cdot 2^5 = 96$

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

$f(-1) = (-1)^2 - 3(-1) + 4 = 8$
 $f(0) = (0)^2 - 3(0) + 4 = 4$
 $f(2) = (2)^2 - 3(2) + 4 = 2$
 $f(5) = (5)^2 - 3(5) + 4 = 14$

13) $f(x) = \frac{1}{2}x - \frac{5}{2}$

$f(-1) = \frac{1}{2}(-1) - \frac{5}{2} = -\frac{1}{2} - \frac{5}{2} = -3$
 $f(0) = \frac{1}{2}(0) - \frac{5}{2} = -\frac{5}{2}$
 $f(2) = \frac{1}{2}(2) - \frac{5}{2} = 1 - \frac{5}{2} = -\frac{3}{2}$
 $f(5) = \frac{1}{2}(5) - \frac{5}{2} = \frac{5}{2} - \frac{5}{2} = 0$

14) $f(x) = 2(-3)^x$

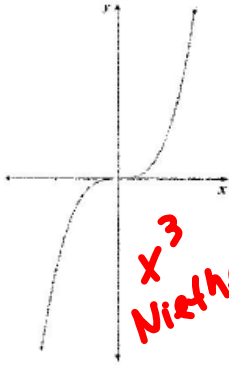
$f(-1) = 2(-3)^{-1} = -\frac{2}{3}$
 $f(0) = 2(-3)^0 = 2$
 $f(2) = 2(-3)^2 = 18$
 $f(5) = 2(-3)^5 = -486$

15) $f(x) = -5x^2 + x - 11$

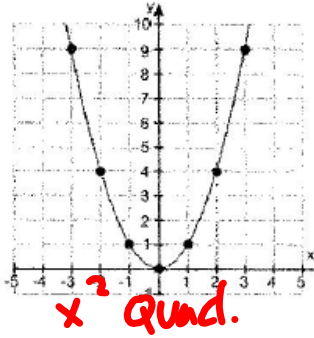
$f(-1) = -5(-1)^2 + (-1) - 11 = -5 - 1 - 11 = -17$
 $f(0) = -5(0)^2 + (0) - 11 = -11$
 $f(2) = -5(2)^2 + (2) - 11 = -20 + 2 - 11 = -29$
 $f(5) = -5(5)^2 + (5) - 11 = -125 + 5 - 11 = -131$

Exponential, Quadratic, or Neither.

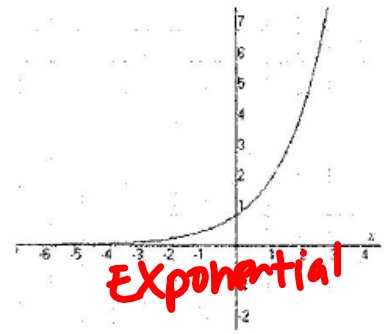
16)



17)



18)



19) $f(x) = 2^{x-1} + 5$
Expo

20) $f(x) = \frac{2}{x-3} + 3$
Neither

21) $f(x) = \frac{7}{5}x^2 - \frac{5}{3}x + \frac{3}{2}$
Quadratic

22) Expo!

x	y
0	4
1	12
2	36
3	108
4	324

$\cdot 3$
 $\cdot 3$

23)

x	-3	-2	-1	0	1	2	3
y	18	7	0	-3	-2	3	12

-11 -7 -3 -1 $+5$ $+9$
 -4 -4 -4 -4 -4 -4 ← Quad.

24)

x	-3	-2	-1	0	1	2	3
y	4	-1	-4	-5	-4	-1	4

-5 -3 -1 $+1$ $+3$ $+5$
 $+2$ $+2$ $+2$ $+2$ $+2$ $+2$ ← Quad.

Multiplying -8

25) $f(x) = -8f(x-1)$
 $f(0) = 5$ Expo!

26) $f(x) = f(x-1) - 6$
 $f(0) = 5$ sub 6 linear

27) $f(x) = f(x-1) + 5x - 10$
 $f(0) = 5$ adding a line a Quad.

①	pattern	next figure	table of values	formula	type											
		<table border="1"> <thead> <tr> <th>Step # (n)</th> <th># of Squares f(n)</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td></tr> <tr><td>1</td><td>1</td></tr> <tr><td>2</td><td>2</td></tr> <tr><td>3</td><td>3</td></tr> <tr><td>4</td><td>4</td></tr> </tbody> </table>	Step # (n)	# of Squares f(n)	0	0	1	1	2	2	3	3	4	4	<p>Recursive: $f(x) = f(x-1) + 1$ $f(1) = 1$</p> <p>Explicit: $y = 1x + 0$</p>	<p>Linear <input checked="" type="checkbox"/></p> <p>Quadratic <input type="checkbox"/></p> <p>Exponential <input type="checkbox"/></p>
Step # (n)	# of Squares f(n)															
0	0															
1	1															
2	2															
3	3															
4	4															
		<table border="1"> <thead> <tr> <th>Step # (n)</th> <th># of Squares f(n)</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td></tr> <tr><td>1</td><td>3</td></tr> <tr><td>2</td><td>6</td></tr> <tr><td>3</td><td>9</td></tr> <tr><td>4</td><td>12</td></tr> </tbody> </table>	Step # (n)	# of Squares f(n)	0	0	1	3	2	6	3	9	4	12	<p>Recursive: $f(x) = f(x-1) + 3$ $f(1) = 3$</p> <p>Explicit: $y = 3x + 3$</p>	<p>Linear <input checked="" type="checkbox"/></p> <p>Quadratic <input type="checkbox"/></p> <p>Exponential <input type="checkbox"/></p>
Step # (n)	# of Squares f(n)															
0	0															
1	3															
2	6															
3	9															
4	12															
		<table border="1"> <thead> <tr> <th>Step # (n)</th> <th># of Squares f(n)</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td></tr> <tr><td>1</td><td>1</td></tr> <tr><td>2</td><td>4</td></tr> <tr><td>3</td><td>9</td></tr> <tr><td>4</td><td>16</td></tr> </tbody> </table>	Step # (n)	# of Squares f(n)	0	0	1	1	2	4	3	9	4	16	<p>Recursive: $f(x) = f(x-1) + (2x-1)$ $f(1) = 1$</p> <p>Explicit: $y = x^2$</p>	<p>Linear <input type="checkbox"/></p> <p>Quadratic <input checked="" type="checkbox"/></p> <p>Exponential <input type="checkbox"/></p>
Step # (n)	# of Squares f(n)															
0	0															
1	1															
2	4															
3	9															
4	16															
		<table border="1"> <thead> <tr> <th>Step # (n)</th> <th># of Squares f(n)</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td></tr> <tr><td>1</td><td>2</td></tr> <tr><td>2</td><td>6</td></tr> <tr><td>3</td><td>12</td></tr> <tr><td>4</td><td>20</td></tr> </tbody> </table>	Step # (n)	# of Squares f(n)	0	0	1	2	2	6	3	12	4	20	<p>Recursive: $f(x) = f(x-1) + (2x+1)$ $f(1) = 2$</p> <p>Explicit: $y = x(x+1)$ $y = x^2 + x$</p>	<p>Linear <input type="checkbox"/></p> <p>Quadratic <input checked="" type="checkbox"/></p> <p>Exponential <input type="checkbox"/></p>
Step # (n)	# of Squares f(n)															
0	0															
1	2															
2	6															
3	12															
4	20															

⑤

Step 1 Step 2 Step 3

Step # (n)	# of Squares f(n)
0	1
1	5
2	9
3	13
4	

Recursive: $f(x) = f(x-1) + 4$
 $f(1) = 5$
 Explicit: $y = 4x - 3$

Linear
 Quadratic
 Exponential

⑥

Step 1 Step 2 Step 3

Step # (n)	# of Squares f(n)
0	1
1	4
2	9
3	16
4	25

Recursive: $f(x) = f(x-1) + (2x-1)$
 $f(1) = 4$
 Explicit: $y = x^2 + 1$

Linear
 Quadratic
 Exponential

⑦ CHALLENGE!

Step 1 Step 2 Step 3 Step 4

Step # (n)	# of Squares f(n)
0	1
1	3
2	6
3	10
4	15

Recursive: $f(x) = f(x-1) + (x+1)$
 $f(1) = 3$
 Explicit: $\frac{x(x+1)}{2}$

Linear
 Quadratic
 Exponential

⑧ CHALLENGE!

Step 1 Step 2 Step 3 Step 4

Step # (n)	# of Squares f(n)
0	1
1	5
2	14
3	30
4	55

Recursive: $f(x) = f(x-1) + (2x+4)$
 $f(1) = 5$
 Explicit: $y = \frac{1}{2}x^2 + 5x + 6$

Linear
 Quadratic
 Exponential

$(1, 12)$

$$y = 1x^2 + bx + 6$$

$$12 = (1)^2 + b(1) + 6$$

$$12 = 1 + b + 6$$

$$12 = 7 + b$$

$$5 = b$$