Bellwork Alg 2 Wednesday, October 16, 2019

1. The function $f(x) = 2f(x+3) - 5$. The function $g(x)$ is a transformation of $f(x)$ and is defined by the following equation: $g(x) = -5f(x-4) - 1$. Describe all the transformations performed on $f(x)$ in order to get the function $g(x)$.

2. Given $f(x) = -3(x-4)^2 + 1$. Write the equation of $f(x)$ after a translation 8 units right and 3 units down, an x-axis reflection, and a vertical shrink by a factor of $\frac{1}{2}$.

3. Expand and simplify each.

a) $(x+7)(x-5)$ b) $(2x-9)(3x+4)$ c) $(x-4)(2x^2-x+7)$

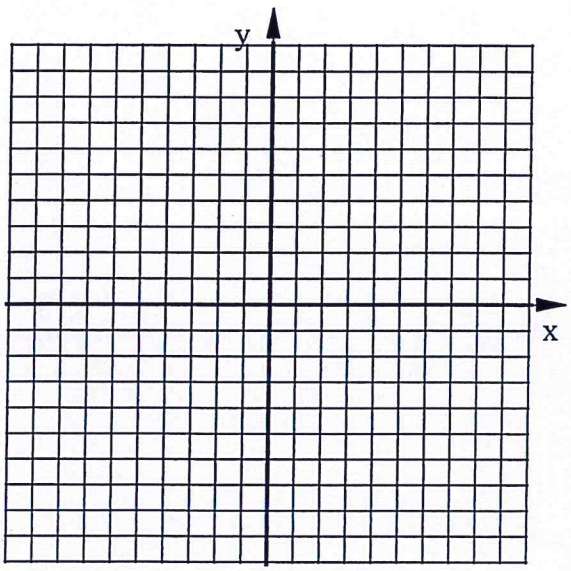
4. Given these two expressions: A: $x^2 - 3x + 6$ B: $2x^2 - 4x + 9$

a) Find $A - B$ b) Find $2B + A$

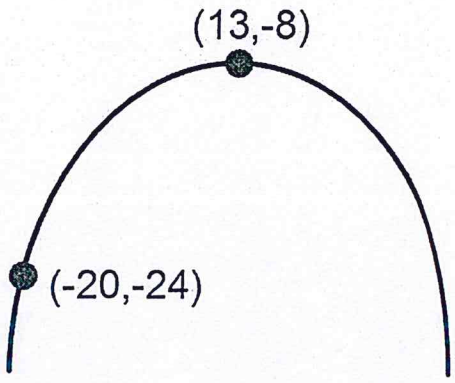
5. Factor each using GCF.

a) $32x^2 + 52x$ b) $24c^3 - 54c^2 + 6c$

6. Graph using 5 points. $y = -4(x-3)^2 + 10$



7. Write the equation of this quadratic in Vertex Form



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ANSWERS

1. The function $f(x) = 2f(x+3) - 5$. The function $g(x)$ is a transformation of $f(x)$ and is defined by the following equation: $g(x) = -5f(x-4) - 1$. Describe all the transformations performed on $f(x)$ in order to get the function $g(x)$.

$f(x) = 2f(x+3) - 5$ $\qquad$ $g(x) = -5f(x-4) - 1$

a: $2 \to -5$ MULTIPLIED BY $-5/2$ → x-axis Reflection, 5/2 times taller

h: $x+3 \to x-4$ → moved 7 right (3 Left, 4 right) → 7 right

k: $-5 \to -1$ → added 4 → 4 up

2. Given $f(x) = -3(x-4)^2 + 1$. Write the equation of $f(x)$ after a translation 8 units right and 3 units down, an x-axis reflection, and a vertical shrink by a factor of $\frac{1}{2}$.

$\frac{3}{2}(x-12)^2 - 2$

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

$(-3)(-\frac{1}{2}) = +\frac{3}{2}$

1 up now → 3 down = 2 down total

4 right now, 8 more right = 12 right total

3. Expand and simplify each.

a) $(x+7)(x-5)$

	x	$+7$
x	x^2	$+7x$
-5	$-5x$	-35

$x^2 + 2x - 35$

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

	$2x$	-9
$3x$	$6x^2$	$-27x$
$+4$	$+8x$	-36

$6x^2 - 19x - 36$

c) $(x-4)(2x^2-x+7)$

	$2x^2$	$-x$	$+7$
x	$2x^3$	$-x^2$	$+7x$
-4	$-8x^2$	$+4x$	-28

$2x^3 - 9x^2 + 11x - 28$

4. Given these two expressions: A: $x^2 - 3x + 6$ $\qquad$ B: $2x^2 - 4x + 9$

a) Find $A - B$

$(x^2 - 3x + 6) - (2x^2 - 4x + 9)$

$= -x^2 + x - 3$

b) Find $2B + A$

$2(2x^2 - 4x + 9) + (x^2 - 3x + 6)$

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

$= 5x^2 - 11x + 24$

5. Factor each using GCF.

a) $32x^2 + 52x$

GCF = $4x$

$4x(8x + 13)$

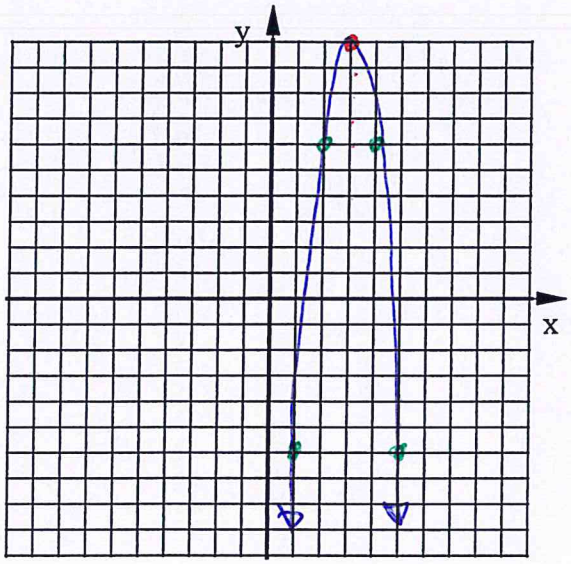
b) $24c^3 - 54c^2 + 6c$

GCF = $6c$

$6c(4c^2 - 9c + 1)$

6. Graph using 5 points. $y = -4(x-3)^2 + 10$

VERTEX = (3, 10)



1st pt $\quad \frac{1}{1} \mid 1 \times (-4) \rightarrow \frac{1}{-4}$

2nd pt $\quad \frac{4}{2} \mid 4 \times (-4) \rightarrow \frac{2}{-16}$

7. Write the equation of this quadratic in Vertex Form