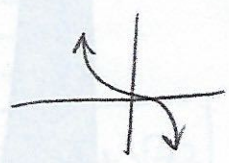


Algebra 2 Quiz #4 Part 1: Chapter 4.1-4.4 (2 points each)

1. Describe the end behavior of the graph of the function: $h(x) = 2 - 8x^4 - 15x^3 - 4x^7 + 15x^2$

Leading co-eff negative, degree odd



D

$h(x) \rightarrow -\infty$ as $x \rightarrow +\infty$

$h(x) \rightarrow +\infty$ as $x \rightarrow -\infty$

2. Find the sum: $(2x^6 - 3x^5 + 2x^2 + 8x) + (-5x^5 + 2x^3 - 4x^2 - 9x + 7)$

C

$2x^6 - 3x^5 + 2x^2 + 8x - 5x^5 + 2x^3 - 4x^2 - 9x + 7$

$2x^6 - 8x^5 + 2x^3 - 2x^2 - x + 7$

3. Find the product: $(x - 5)(6x^2 - 6x + 8)$

D

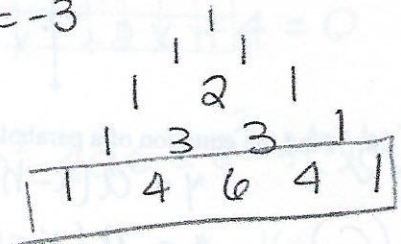
$6x^3 - 6x^2 + 8x - 30x^2 + 30x - 40$

$6x^3 - 36x^2 + 38x - 40$

4. Use Pascal's Triangle to expand the binomial: $(t - 3)^4$

$a = t \quad b = -3$

$(1)a^4 + (4)a^3b + (6)a^2b^2 + (4)ab^3 + (1)b^4$
 $t^4 + 4t^3(-3) + 6t^2(-3)^2 + 4(t)(-3)^3 + (-3)^4$



$t^4 - 12t^3 + 54t^2 - 108t + 81$

5. Divide using polynomial long division: $(4x^4 - 2x^3 - 30x^2 + 15) \div (x^2 - 2x + 3)$

$4x^2 + 6x - 30$
 $x^2 - 2x + 3 \overline{) 4x^4 - 2x^3 - 30x^2 + 0x + 15}$
 $\underline{-4x^4 + 8x^3 + 12x^2}$
 $6x^3 - 42x^2 + 0x$
 $\underline{-6x^3 + 12x^2 + 18x}$
 $-30x^2 - 18x + 15$
 $\underline{+30x^2 + 60x + 90}$
 $-78x + 105$

$4x^2 + 6x - 30 + \frac{-78x + 105}{x^2 - 2x + 3}$

$$k = -4$$

6. Divide using synthetic division: $(x^2 + 6x + 13) \div (x + 4)$

$$\begin{array}{r|rrr} -4 & 1 & 6 & 13 \\ & & -4 & -8 \\ \hline & 1 & 2 & 5 \end{array}$$

$$\boxed{x + 2 + \frac{5}{x+4}}$$

7. Use synthetic division to evaluate the function for the indicated value of x : $f(x) = 4x^3 - 20x^2 + 9x + 7$; $x = 4$

$$\begin{array}{r|rrrr} 4 & 4 & -20 & 9 & 7 \\ & & 16 & -16 & -28 \\ \hline & 4 & -4 & -7 & -21 \end{array}$$

$$\boxed{f(4) = -21}$$

8. Factor the polynomial completely: $s^3 - 64$

$$\boxed{(s-4)(s^2 + 4s + 16)}$$

$$s^3 - 4^3$$

9. Factor the polynomial completely: $h^3 - 2h^2 + 8h - 16$

$$\boxed{h^3 - 2h^2 + 8h - 16}$$

$$h^2(h-2) + 8(h-2)$$

$$\boxed{(h^2 + 8)(h-2)}$$

Version B SOLVED

Part 2: Ch. 1-3 Review (3 points each)

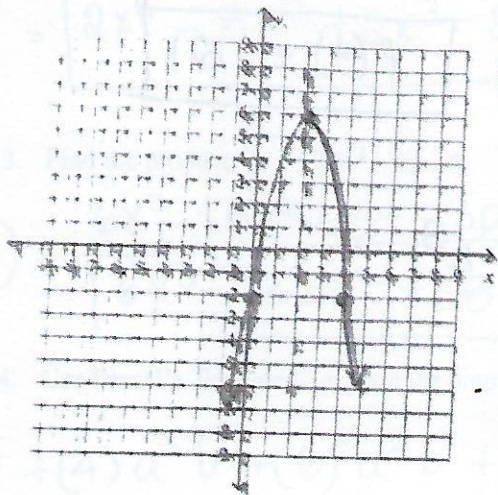
1. Write a function g whose graph represents the indicated transformation of the graph of f :
 $f(x) = -|x - 6| - 6$; translation 3 units right

$g(x) = -|x - 3|$ (C)

$g(x) = -|(x - 3) - 6| - 6$

$= -|x - 3 - 6| - 6 = \boxed{-|x - 9| - 6}$

2. Graph the function (1 point). Label the vertex and axis of symmetry (2 points):
 $f(x) = -2x^2 + 8x - 2$



(C)

$x: \frac{-b}{2a} = \frac{-8}{2(-2)} = \frac{-8}{-4} = 2$

$y: -2(2)^2 + 8(2) - 2$

$= -8 + 16 - 2 = 6$

AOS: $x = 2$

3. Solve the system:

$-y = -x - 4$

$y = 2x^2 - x - 36$

$y = x + 4$

$y = 2x^2 - x - 36$

$x + 4 = 2x^2 - x - 36$

$2x^2 - 2x - 40 = 0$

$x^2 - x - 20 = 0$

$(x - 5)(x + 4) = 0$

$x = 5$ | $x = -4$

$-y = -5 - 4$

$-y = -9$

$y = 9$

$-y = 4 - 4$

$y = 0$

(B)

$\boxed{(5, 9)}$

$! (-4, 0)$

4. Solve the equation: $3(x+2)^2 - 8 = 3$

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

$$(x+2)^2 = \frac{11}{3}$$

$$x+2 = \pm \frac{\sqrt{11}}{\sqrt{3}} = \pm \frac{\sqrt{33}}{3}$$

$$x = -2 \pm \frac{\sqrt{33}}{3} \quad \text{(A)}$$

5. Write an equation of the parabola in intercept form that has x-intercepts of 3 and -3 and passes through (-2, 50)

$$y = a(x-p)(x-q)$$

$$y = a(x-3)(x+3)$$

$$50 = a(-2-3)(-2+3) = a(-5)(1) = -5a$$

(C)

$$y = -10(x+3)(x-3) \quad 50 = -5a \quad a = -10$$

6. Find the discriminant of the quadratic equation $-3x^2 - 2x = -14$ and describe the number and type of solutions of the equation.

Value of discriminant (2 points): 172

Number and type of solution (1 point): 2 real solutions

$$-3x^2 - 2x + 14 = 0$$

$$b^2 - 4ac = (2)^2 - 4(-3)(14)$$

$$= 4 + 168 = 172$$

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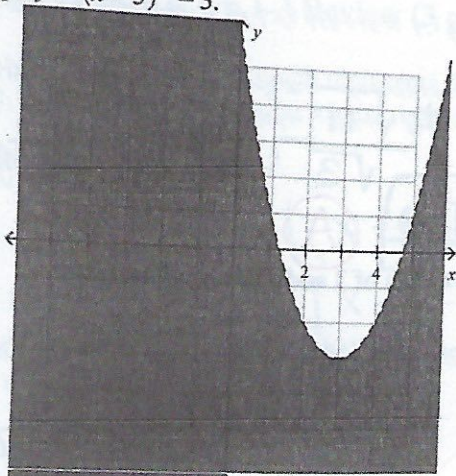
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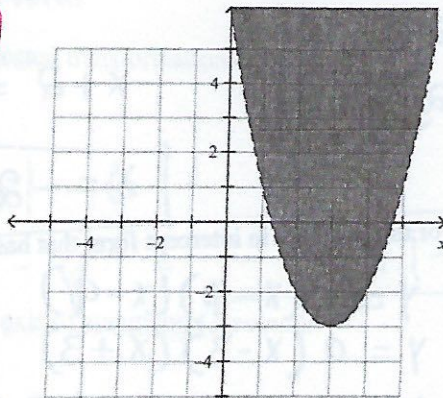
$$= 4 + 168 = 172$$

7. Graph $y > (x-3)^2 - 3$.

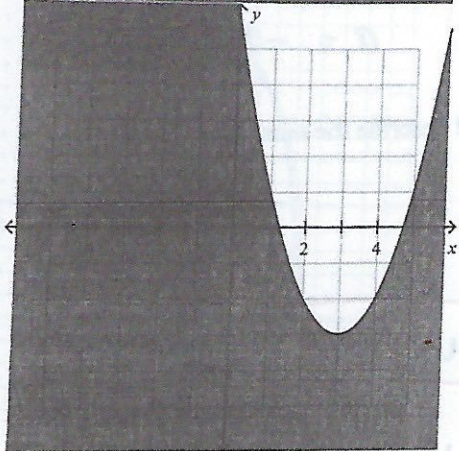
a.



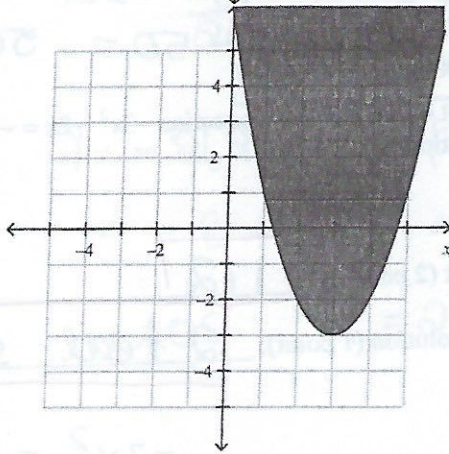
c.



b.



d.



8. Find the equation of a parabola that passes through $(-11, 10)$ and has vertex $(-5, 5)$.

$$y = a(x-h)^2 + k \quad h = -5 \quad k = 5$$

$$y = a(x+5)^2 + 5$$

$$10 = a(-11+5)^2 + 5 \Rightarrow 10 = 36a + 5$$

$$\Rightarrow a = \frac{5}{36}$$

c

9. Perform the operation $(3+i)(8-6i)$

$$24 - 18i + 8i - 6i^2$$

$$24 + 6 - 10i$$

$$= \boxed{30 - 10i} \quad \text{B}$$

$$y = \frac{5}{36}(x+5)^2 + 5$$