

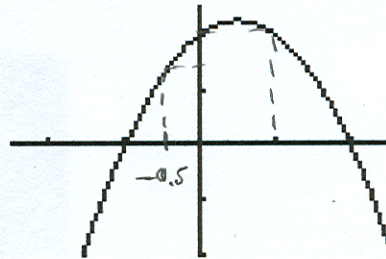
MONTGOMERY COLLEGE  
Department of Mathematics  
Rockville Campus

MA 103 KATIRAIE QUIZ #5 Form A SECTIONS (5.1 - 5.4) Spring 07

NAME Solution SCORE:      / 20

\*\*\* RETAIN ALL GRADED PAPERS FOR YOUR RECORDS \*\*\*

1) Given the following graph of  $f(x)$  find the following:



a) Estimate  $f(1) = 2$

b) Estimate  $f(-0.5) = 1.5$

c) Estimate the  $x$  value so that  $f(x) = 0$   $x = -1$  and  $x = 2$

2) Multiply the following expressions (and simplify)

a)  $4(x^4 - 1) - (4x^4 + 3x + 7)$

$$\begin{aligned} &= 4x^4 - 4 - 4x^4 - 3x - 7 \\ &= \boxed{-3x - 11} \end{aligned}$$

b)  $(3x - 5)^2$

$$\begin{aligned} &(3x - 5)(3x - 5) \\ &= 9x^2 - 15x - 15x + 25 \\ &= \boxed{9x^2 - 30x + 25} \end{aligned}$$

c)  $3x(x+1)(x-1)$

$$\begin{aligned} &= 3x(x^2 - 1) \\ &= \boxed{3x^3 - 3x} \end{aligned}$$

d)  $(2r - 4t)(3r^2 + rt - t^2)$

$$\begin{aligned} &6r^3 + 2r^2t - 2rt^2 - 12r^2t - 4rt^2 + 4t^3 \\ &= \boxed{6r^3 - 10r^2t - 6rt^2 + 4t^3} \end{aligned}$$



3) Factor the following:

a)  $-9n^4 - 6n^2 - 3n$

$$= -3n(3n^3 + 2n + 1)$$

b)  $x^3 + 3x^2 + 2x + 6$

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

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

$-30$   
 $\begin{matrix} \text{---} & \text{---} \\ \text{---} & \text{---} \\ \text{---} & \text{---} \end{matrix}$   
 $\begin{matrix} 15 & \cdot & -2 & = & -30 \\ 15 & + & 2 & = & 13 \end{matrix}$   
c)  $10x^2 + 13x - 3$

$$10x^2 + 15x - 2x - 3$$

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

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

d)  $2y^3 - 14y^2 + 20y$

$$= 2y(y^2 - 7y + 10)$$

$$= 2y(y-5)(y-2)$$

4) Solve the following algebraically:

a)  $5y^2 + 5y - 30 = 0$

$$(y^2 + y - 6) = 0$$

$$(y+3)(y-2) = 0$$

$$y = -3 \quad y = 2$$

b)  $32x^4 = 16x^3$

$$32x^4 - 16x^3 = 0$$

$$16x^3(2x-1) = 0$$

$$16x^3 = 0$$

$$x = 0$$

$$2x - 1 = 0$$

$$2x = 1$$

$$x = \frac{1}{2}$$



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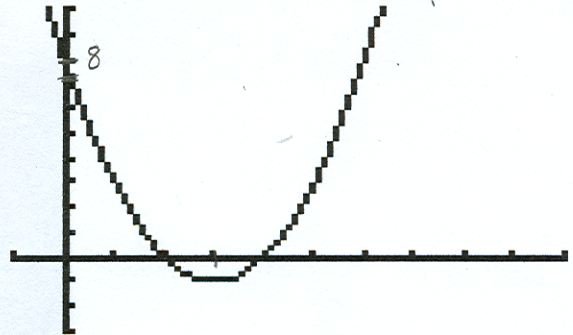
MA 103 KATIRAIE QUIZ #5 Form B SECTIONS (5.1 - 5.4) Spring 07

NAME Solution

SCORE:      / 20

\*\*\* RETAIN ALL GRADED PAPERS FOR YOUR RECORDS \*\*\*

1) Given the following graph of  $f(x)$  find the following:



a) Estimate  $f(0) = 8$

b) Estimate  $f(3) = -1$

c) Estimate the  $x$  value so that  $f(x) = 0$   $x = 2$  and  $x = 4$

2) Solve the following algebraically:

a)  $1 + y - 2y^2 = 0$

$$0 = 2y^2 - y - 1$$

$$0 = (2y + 1)(y - 1)$$

$$0 = 2y + 1$$

$$y - 1 = 0$$

$$\boxed{y = -\frac{1}{2}}$$

or

$$\boxed{y = 1}$$

b)  $34x^4 = 17x^3$

$$34x^4 - 17x^3 = 0$$

$$17x^3(2x - 1) = 0$$

$$\boxed{x = 0}$$

$$\boxed{x = \frac{1}{2}}$$



3) Multiply the following expressions (and simplify)

a)  $4(x^4 - 1) - (4x^4 + 3x + 7)$

$$= \cancel{4x^4} - 4 - \cancel{4x^4} - 3x - 7$$

$$= \boxed{-3x - 11}$$

c)  $3x(x+1)(x-1)$

$$= 3x(x^2 - 1)$$

$$= \boxed{3x^3 - 3x}$$

b)  $(3x-5)^2$

$$= (3x-5)(3x-5)$$

$$= 9x^2 - 15x - 15x + 25$$

$$= \boxed{9x^2 - 30x + 25}$$

d)  $(2r-4t)(3r^2+rt-t^2)$

$$6r^3 + 2r^2t - 2rt^2 - 12rt^2 - 4rt^2 + 4t^3$$

$$= \boxed{6r^3 - 10r^2t - 6rt^2 + 4t^3}$$

4) Factor the following:

a)  $-9n^4 - 6n^2 - 3n$

$$= \boxed{-3n(3n^3 + 2n + 1)}$$

b)  $x^3 + 3x^2 + 2x + 6$

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

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

c)  $10x^2 + 13x - 3$

$(10)(-3) = -30$   
 $\swarrow \quad \searrow$   
 $+15 \quad -2$

$$= 10x^2 + 15x - 2x - 3$$

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

$$= \boxed{(5x-1)(2x+3)}$$

d)  $2y^3 - 14y^2 + 20y$

$$= 2y(y^2 - 7y + 10)$$

$$= \boxed{2y(y-2)(y-5)}$$