

MONTGOMERY COLLEGE
Department of Mathematics
Rockville Campus

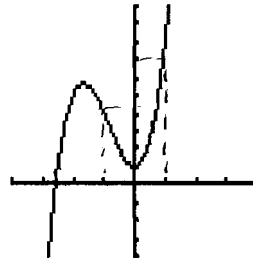
MA 103 KATIRAIE QUIZ #5 Form A SECTIONS (5.1 - 5.4) FALL 2006

NAME Solution

SCORE: / 20

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

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



a) Estimate $f(-1) \approx 4.5$

b) Estimate $f(1) \approx 7$ or 8

c) Estimate the x value so that $f(x) = 0$ $x \approx -2.6$

2) Multiply the following expressions (and simplify)

a) $(4x-3)(4-9x)$

$$= 16x - 36x^2 - 12 + 27x$$

$$= -36x^2 + 43x - 12$$

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

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

$$= 4x^2 + 6x + 6x + 9$$

$$= 4x^2 + 12x + 9$$

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

$$= 9 + 6x - 6x - 4x^2$$

$$= 9 - 4x^2$$

d) $(y+3)(y-4)$

$$= y^2 - 4y + 3y - 12$$

$$= y^2 - y - 12$$

3) Factor the following:

a) $15x^2y + 10xy - 25x^2y^2$

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

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

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

c) $2x^2 + 7x + 3$

$$ac = (2)(3) = 6$$

$$\begin{array}{l} \textcircled{6} \cdot \textcircled{1} = 6 \\ \textcircled{6} + \textcircled{1} = 7 \end{array}$$

$$= 2x^2 + 6x + 1x + 3$$

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

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

d) $5y^2 + 5y - 30$

$$= 5(y^2 + y - 6)$$

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

4) Solve the following algebraically:

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

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

$$16x^3 = 0$$

$$x^3 = \frac{0}{16} = 0$$

$$x^3 = 0$$

$$\boxed{x = 0}$$

b) $2x^2 = 7x$

$$2x^2 - 7x = 0$$

$$x(2x - 7) = 0$$

$$\boxed{x = 0}$$

$$2x - 7 = 0$$

$$2x = 7$$

$$\boxed{x = \frac{7}{2}}$$

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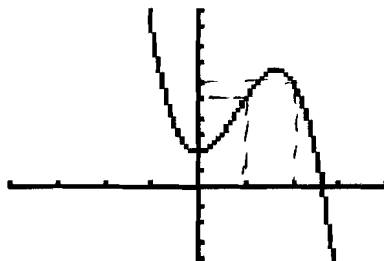
MA 103 KATIRAIE QUIZ #5 Form B SECTIONS (5.1 - 5.4) FALL 2006

NAME Solution

SCORE: / 20

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

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



a) Estimate $f(1) \approx 5$

b) Estimate $f(2) \approx 6$

c) Estimate the x value so that $f(x) = 0 \Rightarrow x \approx 2.6$

2) Multiply the following expressions (and simplify)

a) $(5x-3)(4-3x)$

$$= 20x - 15x^2 - 12 + 9x$$

$$= \boxed{-15x^2 + 29x - 12}$$

b) $(5x+2)^2$

$$= (5x+2)(5x+2)$$

$$= 25x^2 + 10x + 10x + 4$$

$$= \boxed{25x^2 + 20x + 4}$$

c) $(4-3x)(4+3x)$

$$= 16 + 12x - 12x - 9x^2$$

$$= \boxed{16 - 9x^2}$$

d) $(y+4)(y-3)$

$$= y^2 - 3y + 4y - 12$$

$$= \boxed{y^2 + y - 12}$$

3) Factor the following:

a) $8x^2y + 16xy - 4x^2y^2$

$$= 4xy(2x + 4 - xy)$$

b) $x^3 - 7x^2 - 3x + 21$

$$= x^2(x-7) - 3(x-7)$$

$$= (x-7)(x^2 - 3)$$

c) $y^2 - 17y + 72$

$$= (y-9)(y-8)$$

d) $2y^2 + 12y + 16$

$$= 2(y^2 - 6y + 8)$$

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

4) Solve the following algebraically:

a) $5x^4 - 30x^3 = 0$

$$5x^3(x-6) = 0$$

$$5x^3 = 0 \quad x-6 = 0$$

$$x = 0$$

$$x = 6$$

b) $15x^2 = 10x$

$$15x^2 - 10x = 0$$

$$5x(3x - 2) = 0$$

$$5x = 0$$

$$x = 0$$

$$3x - 2 = 0$$

$$x = \frac{2}{3}$$