Final Review

#4 ⇒ Use synthetic ÷ b/c x+ or x−

$x^3 + 3x^2 - 8x - 14 \div (x+2)$

$x+2=0$
$-2\ \ -2$
$x=-2$

-2	1	3	-8	-14
	↓	-2	-2	20
	1	1	-10	6

$x^2 + x - 10 + \frac{6}{x+2}$

⇒ zeros: set each factor to zero
multiplicity: exponents

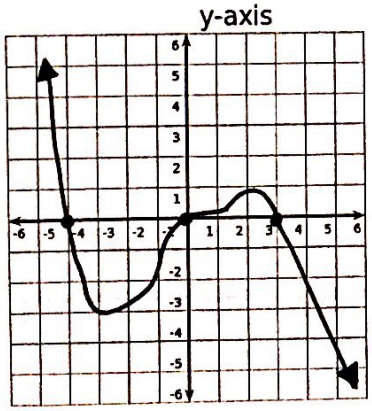
#5 $f(x) = 6(x-4)^3(x+3)$

$x-4=0$
$+4\ \ +4$
$x=4$ multi. 3

$x+3=0$
$-3\ \ -3$
$x=-3$ mult. 1

#6

6. Find the requested information for the graph shown below:



Look @ x-values
zeroes: @ $x=-4, 0, 3$
increasing: $(-3, 2)$
decreasing: $(-\infty, -3)\ (2, \infty)$

use zeros
positive: $(-\infty, -4)\ (0, 3)$
negative: $(-4, 0)\ (3, \infty)$

end behavior:
$x \to -\infty,\ y \to \infty$
$x \to \infty,\ y \to -\infty$

#1 $y = 3x+2$

$2x + y = -8$

⇒ Solve by *substitution, Elimination or graphing

$2x + 3x + 2 = -8$

$5x + 2 = -8$

$-2 \quad -2$

$\frac{5x}{5} = \frac{-10}{5}$

$x = -2$

$y = 3(-2) + 2$

$y = -6 + 2$

$y = -4$

Solution: $(-2, -4)$

#2 ⇒ ① Switch x & y ② Solve for y

$y = \frac{6x+3}{2}$

① $x = \frac{6y+3}{2}$

② $2x = 6y + 3$

$-3 \quad -3$

$\frac{2x-3}{6} = \frac{6y}{6}$

Inverse symbol

$y^{-1} = \frac{2x-3}{6}$

#5 $\log_4 (9x - 4) = 3$

⇒ ① base of log = base of exponent

② log = exponent

$4^3 = 9x - 4$

$64 = 9x - 4$

$+4 \quad +4$

$68 = 9x$

$x = 68/9$