Solve:

1) $\lim_{x \to 3} \dfrac{-2x^2 + 5x + 3}{x - 3} =$

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

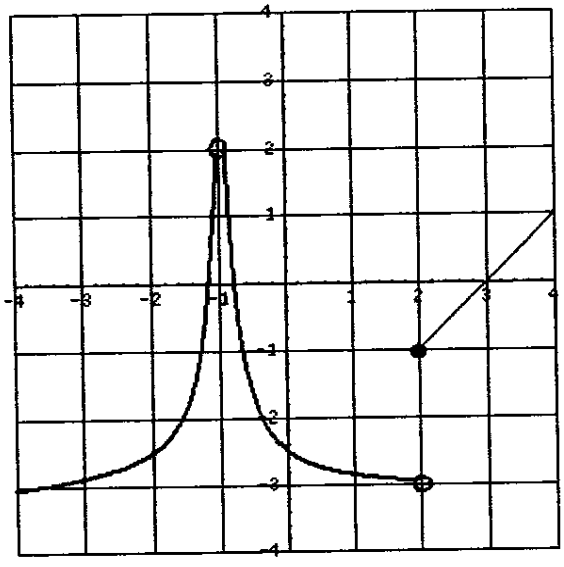
$$= -(2x+1) = -(2 \cdot 3 + 1) = \boxed{-7}$$

2) $\lim_{x \to -2} \dfrac{-4x^2 - 8x}{x + 2} =$

$$\frac{-4x(x+2)}{x+2} = -4(-2)$$

$$= \boxed{8}$$

3) A function is graphed below.



a.) $\lim_{x \to 2^+} f(x) = -1$

c.) $\lim_{x \to 2} f(x) =$ does not exist

b.) $\lim_{x \to 2^-} f(x) = -3$

d.) $\lim_{x \to -1} f(x) = 2$

4) $\lim_{x \to -3} x^3 =$ $(-3)^3 = \boxed{-27}$

5) $\lim_{x \to 0} -4 =$ -4

6) $\lim_{x \to 5} x =$ 5

7) $\lim_{x \to -2} x^3 =$ $(-2)^3 = -8$

8) $\lim_{x \to -5} x^5 =$ $(-5)^5 = -3,125$

9) $\lim_{x \to -3} 1 =$ 1

10) $\lim_{x \to -4} -1 =$ -1

11) $\lim_{x \to -1} x^2 =$ $(-1)^2 = 1$

12) What are the vertical asymptotes of:

$$r(x) = \frac{x^2 - 7x + 12}{x^2 - x - 6}$$

$\frac{(x-3)(x-4)}{(x-3)(x+2)}$

VA = $x = -2$

HA = $y = 1$ Hole = $x = 3$

13) $\lim_{x \to \infty} \frac{2x^3 + 9x^2 - 5x}{4x^3 + 8x^2 + 5x + 1} = \frac{1}{2}$

14) What are the horizontal asymptotes of:

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

$y = 1$

15) What are the horizontal asymptotes of:

$$t(x) = \frac{-x^2 + 4x - 4}{4x^2 + x - 2}$$

$y = -\frac{1}{4}$