

Show work for full credit.

- (7) 1. Find the equation of the straight line through (1, -2) which is perpendicular to the line $x + 3y = 7$.

$$3y = -x + 7$$

$$y = -\frac{1}{3}x + \frac{7}{3}$$

$$m = -\frac{1}{3}$$

$$m = 3$$

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

$$y+2 = 3x-3$$

$$y = 3x - 5$$

- (8) 2. Find the equation of the circle which has as its diameter the line segment between the points (2, 3) and (6, -3).

center (4, 0)

$$r^2 = (4-2)^2 + (0-3)^2 = 4+9 = 13$$

$$(x-4)^2 + y^2 = 13$$

- (9) 3. Find the following limits: Let $f(x) = \frac{x^2-9}{x(x-3)}$.

a. $\lim_{x \rightarrow 0^+} f(x) = +\infty$

b. $\lim_{x \rightarrow \infty} f(x) = 1$

c. $\lim_{x \rightarrow 3} f(x) = 2$

$$x \frac{-9}{-3} \quad ?$$

$$\frac{x^2}{x^2} = 1 \quad ?$$

$$x \frac{(x-3)(x+3)}{x(x-3)} = \frac{x+3}{x} \quad \frac{3+3}{3}$$

Do the following graphs on the next page: Draw and give equations of all asymptotes.

(6) 4. $2x - y = 3$

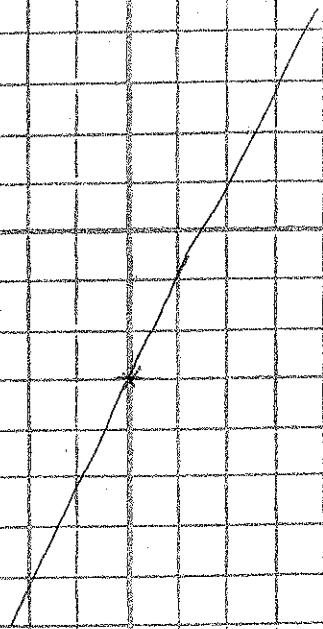
(9) 5. $y = x^3(2-x)(x+3)^4$

(10) 6. $f(x) = \frac{2x^2(x-1)}{(x+2)^3}$

4.

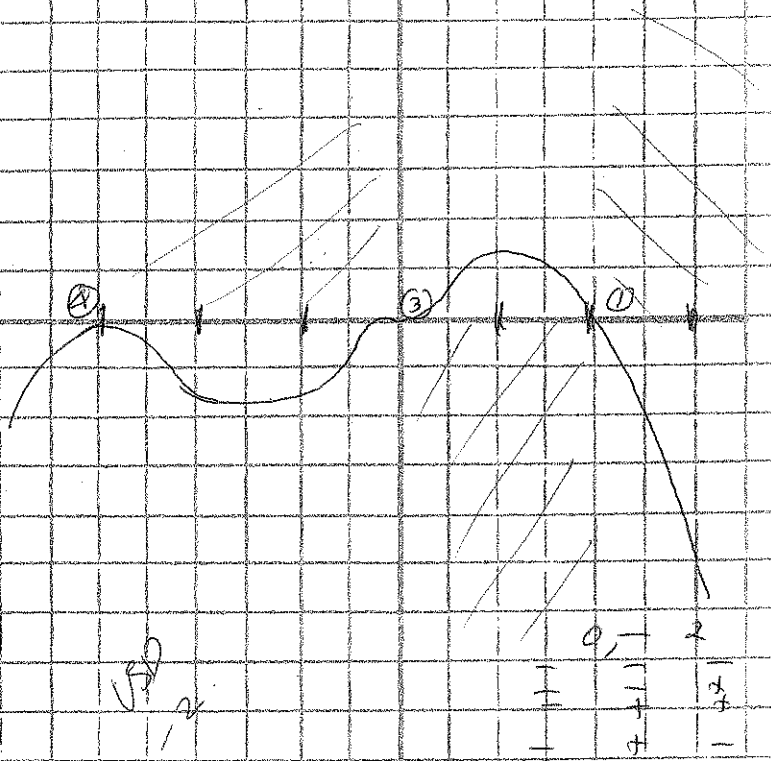
$$2x - y = 3$$

$$y = 2x - 3$$



5.

$$-x^3(x-2)(x+3)^4$$

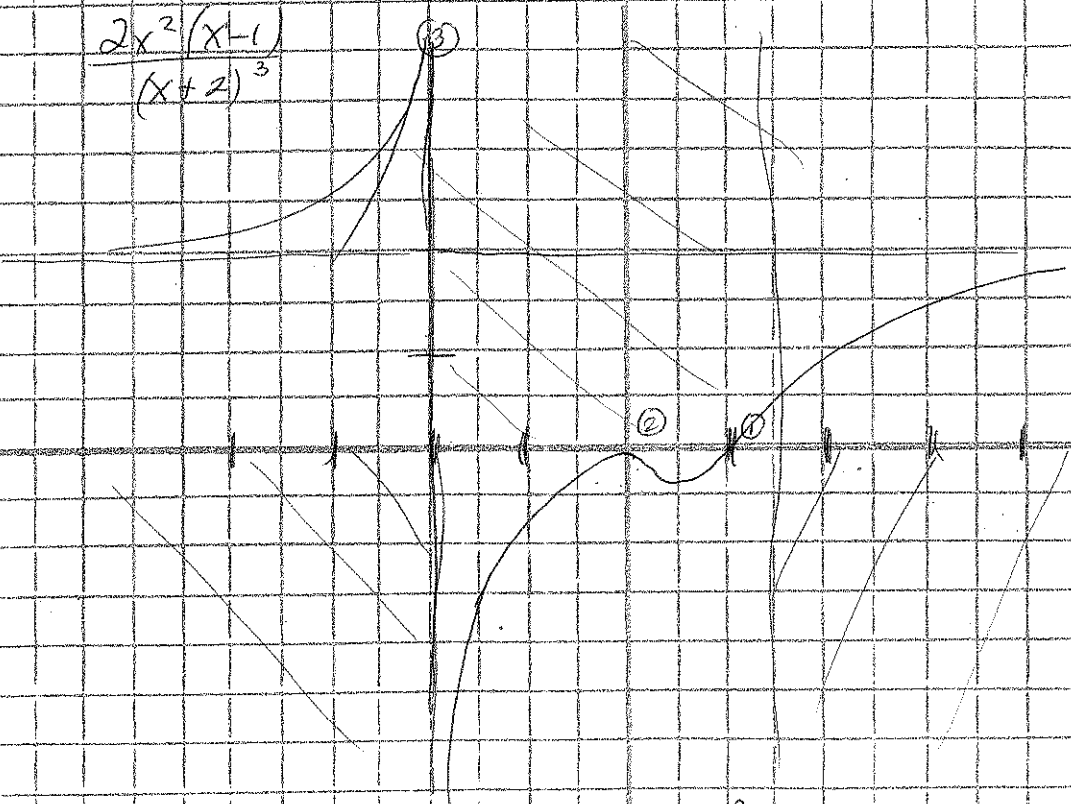


$y = 2$
 $x = -2$

0	-	2
-	+	-
-	+	-

6.

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



-2	1
=	+
+	-
+	+

$\frac{2x^3}{x^3} \rightarrow 2$

$y = 2$
 $x = -2$

$2x$