

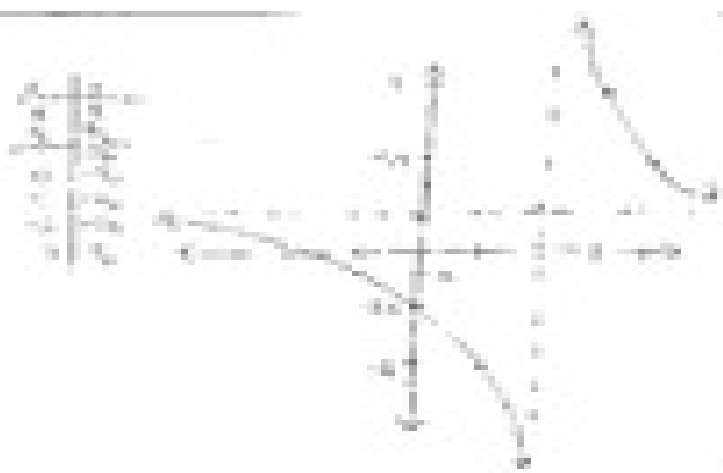
$$1. \quad y = \frac{x^2 + 2x - 30}{x^2 + 4}$$

$$y' = \frac{(2x+2)(x^2+4) - (x^2+2x-30)(2x)}{(x^2+4)^2}$$

$$= \frac{2x^2+2x+8x+8 - 2x^3-4x^2+12x^2+60x}{(x^2+4)^2}$$

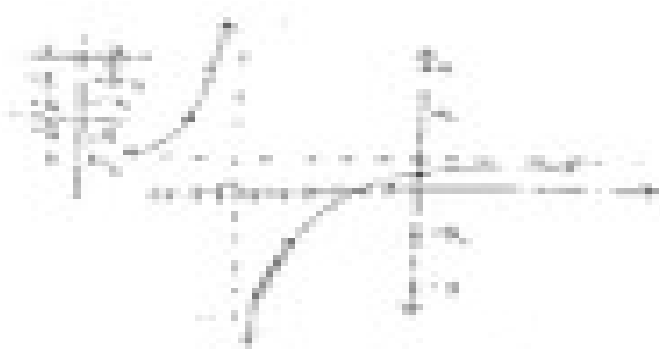
$$= \frac{-2x^3+8x^2+62x+8}{(x^2+4)^2}$$

Domain: $x \in \mathbb{R}$ (all real numbers)
 Hole: $(-3, \frac{3}{2})$
 Int: $x = 2$
 Ext: $y = 0$
 All: none



$$2. \quad f(x) = \frac{2x^2 + 1}{x + 2}$$

Domain: $x \in \mathbb{R} \setminus \{-2\}$
 Hole: none
 Int: $x = -2$
 Ext: $y = 0$
 All: none



$$3. \quad y = \frac{4x^2 + 20x + 25}{x^2 + 4} + \frac{2x^2 + 2x - 30}{x^2 + 4}$$

Domain: $x \in \mathbb{R}$ (all real numbers)
 Hole: none
 Int: $x = 0$
 Ext: none
 All: $y = 4$

$4x^2$	$20x$	25
$2x^2$	$2x$	-30
$6x^2$	$22x$	-5
$6x^2$	$22x$	-5

