

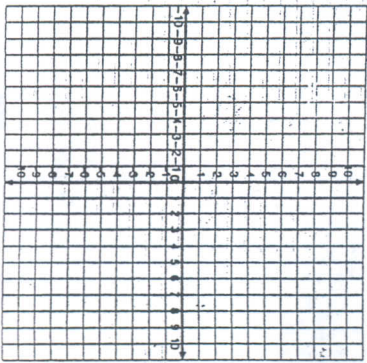
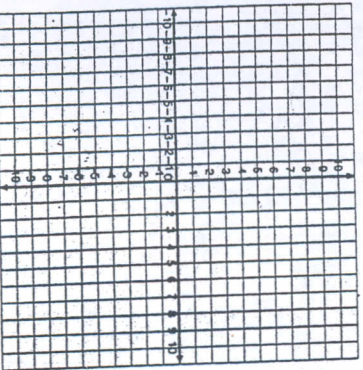
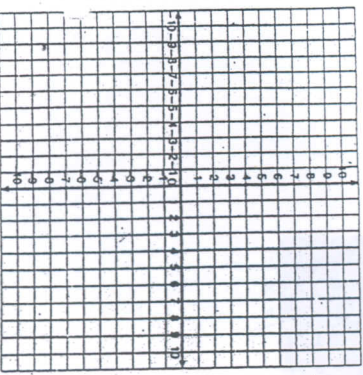
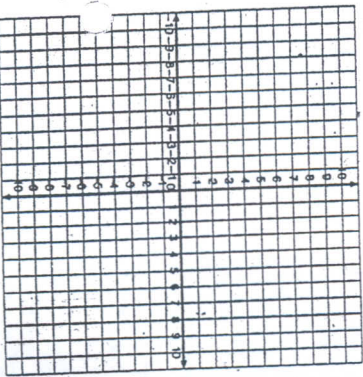
3. Sketch the following curves by first finding all pertinent information.

(a) $y = 2\sqrt{x} + \frac{3}{\sqrt{x}}$

(b) $y = \frac{x^3 - 3x}{x^2 - 1}$

(c) $y = (x^2 - 1)^{1/2}$

(d) $y = x^4 - 6x^2 + 8$



1. Sketch the curve with the following features:

Domain: $x \in \mathbb{R}$

Asymptotes: none

Symmetry: odd

$f(0) = f(7) = 0$

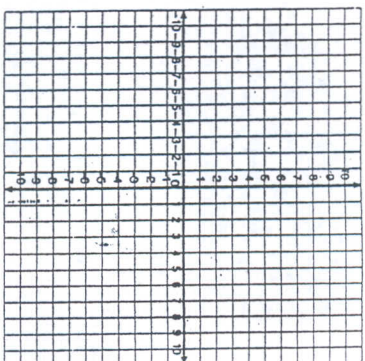
$f(3) = 6$ $f(4) = 4$ $f(5) = 2$

$f'(x) > 0$ if $0 < x < 3$

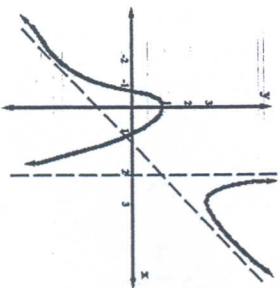
$f'(x) < 0$ if $x > 3$

$f''(x) > 0$ if $4 < x < 5$

$f''(x) < 0$ if $0 < x < 4$ and $x > 5$



2. Use the graph below to answer the following questions:



- State equations for the asymptotes.
- Where is $f'(x) > 0$?
- Where is $f'(x) < 0$?
- State the inflection points.
- Where is $f''(x) > 0$?
- Where is $f''(x) < 0$?
- Where is $f(x) > 0$?
- Where is $f(x) = 0$?

5. Sketch the following curves by first finding all pertinent information.

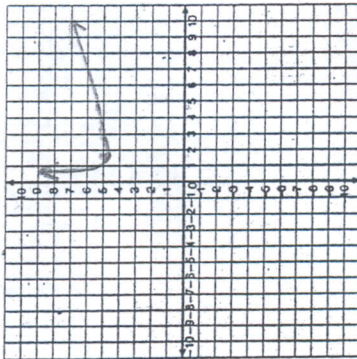
(a) $y = 2\sqrt{x} + \frac{3}{\sqrt{x}}$

(b) $y = \frac{x^3 - 3x}{x^2 - 1}$

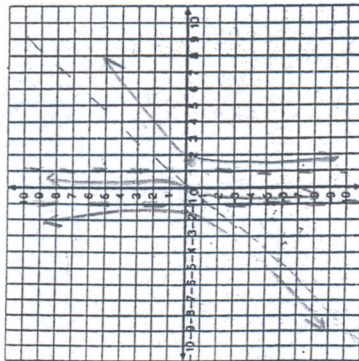
(c) $y = (x^2 - 1)^k$

(d) $y = x^4 - 6x^2 + 8$

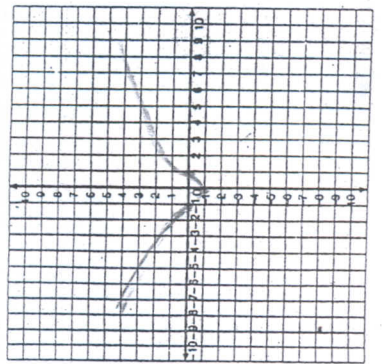
5(a)



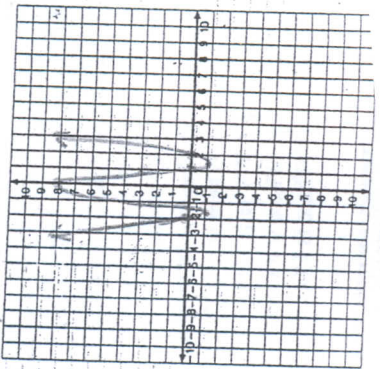
5(b)



5(c)



5(d)



Answer

6. Sketch the curve with the following features:

Domain: $x \in \mathbb{R}$

Asymptotes: none

Symmetry: odd

$f(0) = f(7) = 0$

$f(3) = 6$

$f(4) = 4$

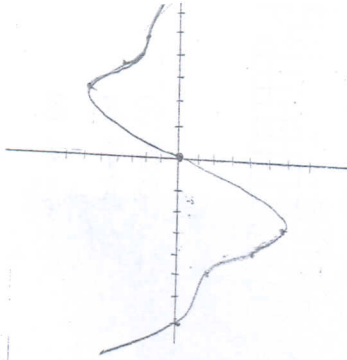
$f(5) = 2$

$f'(x) > 0$ if $0 < x < 3$

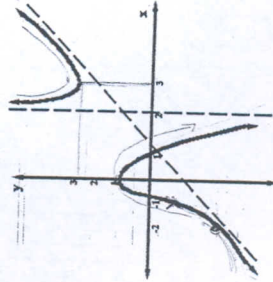
$f'(x) < 0$ if $x > 3$

$f''(x) > 0$ if $4 < x < 5$

$f''(x) < 0$ if $0 < x < 4$ and $x > 5$



7. Use the graph below to answer the following questions:



- State equations for the asymptotes. $x=2, y=x-1$
- Where is $f'(x) > 0$? $(-\infty, 0) \cup (3, \infty)$
- Where is $f'(x) < 0$? $(0, 2) \cup (2, 3)$
- State the inflection points. $(-1, -1)$
- Where is $f''(x) > 0$? $(-\infty, -1) \cup (2, \infty)$
- Where is $f''(x) < 0$? $(-1, 2)$
- Where is $f(x) > 0$? $(-1, 1) \cup (2, \infty)$
- Where is $f'(x) = 0$? $(0, 1), (2, 2)$