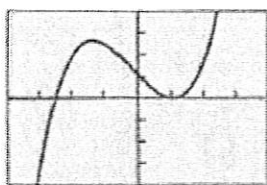
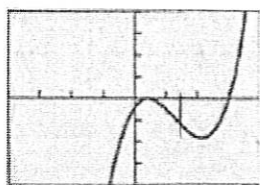


For each graph find the x and y-intercept, the end behavior, and the intervals of concavity. Then match them with the correct equation. You should be able to do this without a calculator.



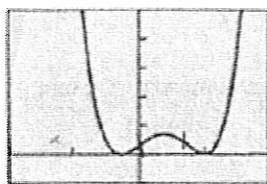
$[-4, 4]$ by $[-200, 200]$

(a)



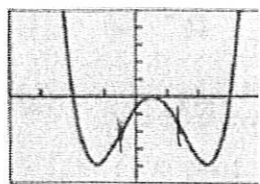
$[-4, 4]$ by $[-200, 200]$

(b)



$[-2, 2]$ by $[-10, 50]$

(c)



$[-4, 4]$ by $[-50, 50]$

(d)

(29) $y = 20x^3 + 8x^2 - 83x + 55$
 Graph (a): x and y-int:
 $x \approx -2.5, x = 0, y = 55$

End Behavior:

$$\lim_{x \rightarrow \infty} f(x) = \infty \quad \lim_{x \rightarrow -\infty} f(x) = -\infty$$

Intervals of Concavity:

$$(-\infty, 0) \text{ down} \quad (0, \infty) \text{ up}$$

(31) Graph (c): x and y-int:
 $x \approx -0.5, 1, y = 3$
 $y = 44x^4 - 65x^3 + x^2 + 17x + 3$

End Behavior:

$$\lim_{x \rightarrow \pm\infty} f(x) = \infty$$

Intervals of Concavity:

$$\text{up } (-\infty, 0)$$

$$\text{down } (0, 0.75)$$

$$\text{up } (0.75, \infty)$$

29. $f(x) = 20x^3 + 8x^2 - 83x + 55$

30. $f(x) = 35x^3 - 134x^2 + 93x - 18$

31. $f(x) = 44x^4 - 65x^3 + x^2 + 17x + 3$

32. $f(x) = 4x^4 - 8x^3 - 19x^2 + 23x - 6$

(30) $y = 35x^3 - 134x^2 + 93x - 18$
 Graph (b): x and y-int:
 $x \approx 0.5, x = 3, y = -18$

End Behavior:

$$\lim_{x \rightarrow -\infty} f(x) = -\infty \quad \lim_{x \rightarrow \infty} f(x) = \infty$$

Intervals of Concavity:

$$(-\infty, 1.5) \text{ down}$$

$$(1.5, \infty) \text{ up}$$

(32) Graph (d): x and y-int:
 $x \approx -1, 1.5, 3.5, y = -6$

End Behavior:

$$\lim_{x \rightarrow \pm\infty} f(x) = \infty$$

Intervals of Concavity:

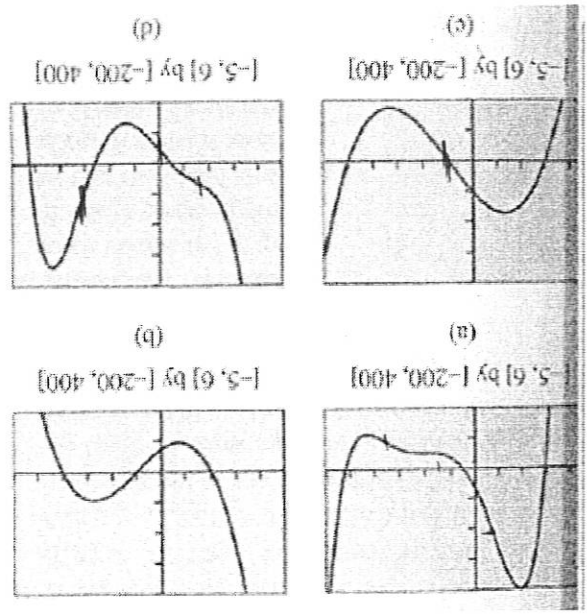
$$(-\infty, -0.5) \text{ up}$$

$$(-0.5, 1.5) \text{ down}$$

$$(1.5, \infty) \text{ up}$$

$$y = 4x^4 - 8x^3 - 19x^2 + 23x - 6$$

For each graph find the x and y-intercepts, the end behavior, and the intervals of concavity. Then match them with the correct equation. You should be able to do this without a calculator.



- 9. $f(x) = 7x^3 - 21x^2 - 91x + 104$
- 10. $f(x) = -9x^3 + 27x^2 + 54x - 73$
- 11. $f(x) = x^5 - 8x^4 + 9x^3 + 58x^2 - 164x + 69$
- 12. $f(x) = -x^5 + 3x^4 + 16x^3 - 2x^2 - 95x - 44$

11 Graph (a): $f(x) = x^5 - 8x^4 + 9x^3 + 58x^2 - 164x + 69$
 x and y-int: $x = -3, 1.5, 5.1$ $y = 69$

End Behavior: $\lim_{x \rightarrow \infty} f(x) = \infty$ $\lim_{x \rightarrow -\infty} f(x) = -\infty$

Intervals of Concavity:
 down $(-\infty, -0.8)$ \cup $(1.5, 3.5)$
 up $(-0.8, 1.5) \cup (3.5, \infty)$

Graph (c): x and y-int: $x = -3, 1.5$ $y = -104$

End Behavior:

$\lim_{x \rightarrow \infty} f(x) = -\infty$ $\lim_{x \rightarrow -\infty} f(x) = \infty$

Intervals of Concavity:

down $(-\infty, 1)$
 up $(1, \infty)$

$y = 7x^3 - 21x^2 - 91x + 104$

10 Graph (b): $y = -9x^3 + 27x^2 + 54x - 73$
 x and y-int: $x = -2, 1, 3$ $y = -73$

End Behavior:

$\lim_{x \rightarrow \infty} f(x) = -\infty$ $\lim_{x \rightarrow -\infty} f(x) = \infty$

Intervals of Concavity:
 down $(-\infty, 1)$ \cup $(3, \infty)$
 up $(1, 3)$

Graph (d): x and y-int: $x = -1.5, 0, 3$ $y = -44$

End Behavior:

$\lim_{x \rightarrow \infty} f(x) = -\infty$ $\lim_{x \rightarrow -\infty} f(x) = \infty$

Intervals of Concavity:

up $(-\infty, -1.5) \cup (0, 3)$
 down $(-1.5, 0) \cup (3, \infty)$

12 $-x^5 + 3x^4 + 16x^3 - 2x^2 - 95x - 44$