Do together D33

Key

A32 p.162-164/ 1-2, 5-7, 11, 17-22, 37-39, 41, 43, 48, 49

(1) end behavior describes the behavior of a graph as $x \to -\infty$ and $x \to +\infty$

(2) $h(x) = -3x^4 + 5x^{-1} - 3x^2$ it is not a polynomial the other 3 are.

(5) x^{-2} so not a polynomial

(6) polynomial
$g(x) = 13x^2 - 12x + \sqrt{3}$
degree 2, quadratic, 13.

(7) polynomial
$h(x) = -\sqrt{7}\,x^4 + 8x^3 + \frac{5}{3}x^2 + x - \frac{1}{2}$
degree 4, quartic, $-\sqrt{7}$

11. $h(-2) = -3(-2)^4 + 2(-2)^3 - 12(-2) - 6$
$-3(16) + 2(-8) + 24 - 6$
$-48 - 16 + 24 - 6$
(11) -46

17. $h(x) = -5x^4$ even w/ "$-a$"
(17) $h(x) \to -\infty$ as $x \to -\infty$
$h(x) \to -\infty$ as $x \to +\infty$

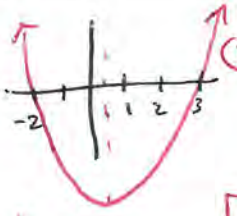
18. $g(x) = 7x^7$ odd w/ "$+a$"
(18) $h(x) \to -\infty$ as $x \to -\infty$
$h(x) \to \infty$ as $x \to \infty$

19. $f(x) = 12x^8$ even w/ "$+a$"
(19) $g(x) \to +\infty$ as $x \to -\infty$
$g(x) \to \infty$ as $x \to \infty$

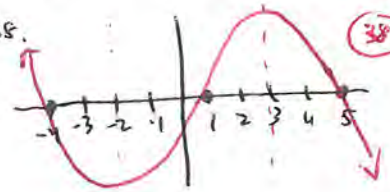
20. $f(x) = -5x^5$ odd w/ "$-a$"
(20) $g(x) \to \infty$ as $x \to -\infty$
$g(x) \to -\infty$ as $x \to \infty$

(21) degree = odd
leading coef = $-$

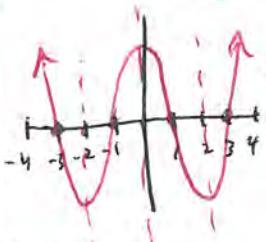
(22) degree = even
leading coef = $+$

37.


(37) degree = even
leading coef = +

38.


(38) degree = odd
leading coef $-$

39.


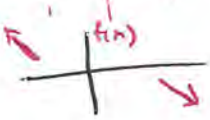
(39) degree = even
leading coef +

41. $d(t) = -0.141t^3 + 9.64t^2 - 232.5t + 2421$

(41a) 1980 - 2007 Number of drive ins ↘ rate of ↘ began to level off in 1995

(41b) 1980-1995 : about -119.6 closings/yr.
1995-2007 : about -19.2

(41c) No years < 1980 graph ↘ too sharply years > 2007 shows "$-$" values which don't make sense given the context.

43.


$g(x) = -f(x)$ vertical flip so opposite
(43) $g(x) \to -\infty$ as $x \to -\infty$
$g(x) \to \infty$ as $x \to \infty$

(48a) degree = odd leading coef = +

(48b) increasing when $x < -3$ and $x > -1$
decreasing when $-3 < x < -1$

(48c) 4 y-intercept

49. see back →

49. $y = ax^3 + bx^2 + cx + d$

$y = 2x^3 + bx^2 + cx + -5$

$f(1) = 0 = 2 + b + c - 5$

$0 = b + c - 3$ $\times 2$

$f(2) = 3 = 2(8) + b(4) + 2c - 5$

$-3 = -3$

$0 = 4b + 2c + 8$

$-(0 = 2b + 2c - 6)$

$0 = 2b + 14$

$-7 = b$

$c = 10$

$f(-5) = 2x^3 - 7x^2 + 10x - 5$

$= 2(-5)^3 - 7(-5)^2 + 10(-5) - 5$

(49) $\boxed{-480}$