Precalculus – Wizer.me Review Answers

① $f(x) = 5x^2 - 8x + 4$

$x = \frac{-b}{2a} = \frac{8}{2(5)} = \frac{4}{5}$

$f(4/5) = 5(4/5)^2 - 8(4/5) + 4$

$= 4/5$

vertex: $(4/5, 4/5)$

② $f(x) = -2(x+5)^2 + 8$

vertex: $(-5, 8)$

$-2(x+5)^2 + 8 = 0$

$-2(x+5)^2 = -8$

$\sqrt{(x+5)^2} = \sqrt{4}$

$x + 5 = \pm 2$

$x = -5 \pm 2$

$x = -3$ **$x = -7$**

③ $h(x) = -.00012x^2 + .18238x + 5$

$x = \frac{-b}{2a} = \frac{-.18238}{2(-.00012)} = 759.92$ ft.

$h(759.92) = -.00012(759.92)^2 + .18238(759.92) + 5$

$= 74.3$ ft. ← max height

$x = \frac{-.18238 \pm \sqrt{(.18238)^2 - 4(-.00012)(5)}}{2(-.00012)}$

$x = 1546.77$ ft. ← Horizontal Distance Traveled

④ $C(x) = .57x^2 - .75x + 1.8$

$x = \frac{-b}{2a} = \frac{.75}{2(.57)} = .658$

$C(.658) = 1.7416$

How many kayaks = 65.
or 66

Cost per kayak = $774.16

⑤ $3x - 2 \overline{)\, 3x^2 - 8x - 4}$

$x - 2$

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

$-6x - 4$

$-(-6x + 4)$

-8

$x - 2 - \frac{8}{3x-2}$

$x - 2 = A$

⑥ $f(x) = -7x^5 + 8x^3 + 7x$ ↑ ↓

$f(x) = 8x^4 + 3x - 2$ ↑ ↑

$f(x) = -2x^2 - 5x + 10$ ↓ ↓

$f(x) = 9x^7 + 8x^4 - 3$ ↓ ↑

⑦ $f(x) = 6x^2 + 11x - 10$

$(3x - 2)(2x + 5) = 0$

$3x - 2 = 0$ $2x + 5 = 0$

$x = 2/3$ **$x = \frac{-5}{2}$**

⑧ $f(x) = 10x^3 + 9x^2 + 2x$

$x(10x^2 + 9x + 2) = 0$

$x = 0$ $(2x+1)(5x+2) = 0$

⑨ The graph bounces at the x-axis instead of passing through when the multiplicity is an even number.

(10) $f(x) = 2x^3 + 3x^2 + 18x + 27$

$x^2(2x+3) + 9(2x+3) = 0$

$(x^2+9)(2x+3) = 0$

$x^2 = -9$ $\quad$ $x = -\frac{3}{2}$

$x = \pm 3i$

(11) $(7-3i)(8+6i)$

$= 56 + 42i - 24i \underbrace{-18i^2}_{+18}$

$= 74 + 18i$

(12) $\frac{(7+5i)}{(3-2i)} \cdot \frac{(3+2i)}{(3+2i)} = \frac{21 + 14i + 15i \underbrace{+10i^2}_{-10}}{9 + 6i - 6i \underbrace{-4i^2}_{+4}} = \frac{11 + 29i}{13} = \frac{11}{13} + \frac{29}{13}i$

(13) $f(x) = x^4 - 3x^3 - 6x^2 - 12x - 40$

+ real zeros: 1

- real zeros: 3 or 1

(14) When creating a list of possible rational zeros, the process is to divide the factors of the constant term by the factors of the leading coefficient.

(15) $f(x) = x^4 - 3x^3 - 6x^2 - 12x - 40$

$\pm \frac{1, 2, 4, 5, 8, 10, 20, 40}{1}$

$= \pm 1, 2, 4, 5, 8, 10, 20, 40$

(16)

-2	1	-3	-6	-12	-40
		-2	10	-8	40
	1	-5	4	-20	0

$x^3 - 5x^2 + 4x - 20 = 0$

$x^2(x-5) + 4(x-5) = 0$

$(x^2+4)(x-5) = 0$ $\quad$ $x = -2$

$x^2 = -4$ $\quad$ $x = 5$

$x = \pm 2i$