Sunday, September 24, 2017
3:55 PM

Chapter Review exercises for 1.4-1.5 67, 71, 73, 75, 79, 83, 85, 89, 93, 99, 100

Determine if the equation represents y as a function of x.

$\boxed{1.4}$ 67) $16x - y^4 = 0$

$\sqrt[4]{16x} = \sqrt[4]{y^4}$

$2\sqrt[4]{x} = |y|$

$y = \pm 2\sqrt[4]{x}$

$\boxed{\text{y is not a function of x. Some x-values correspond to 2 y values}}$

ex: $(16, 4)$ $(16, -4)$

Evaluate & simplify

71) $f(x) = x^2 + 1$

a) $f(2) = (2)^2 + 1 = \boxed{5}$

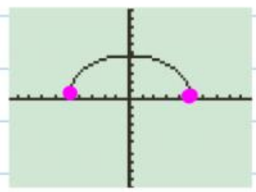
b) $f(-4) = (-4)^2 + 1 = \boxed{17}$

c) $f(t^2) = (t^2)^2 + 1 = \boxed{t^4 + 1}$

d) $f(t+1) = (t+1)(t+1) + 1 = \boxed{t^2 + 2t + 2}$

Find the domain. verify with a graph.

73) $f(x) = \sqrt{25 - x^2}$ ← must be positive or ≥ 0

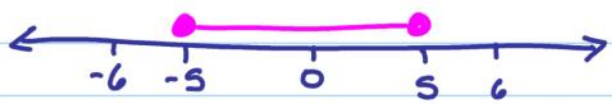


$25 - x^2 \geq 0$

$(5+x)(5-x) \geq 0$

critical values $x = -5$ $x = 5$

$\boxed{[-5, 5]}$



* test intervals

$25-(-6)^2 \geq 0$	$25 - 0^2 > 0$	$25 - 6^2 \geq 0$
False	$25 > 0$	FALSE
	TRUE	

75) $h(x) = \dfrac{x}{x^2 - x - 6}$ ← denom $\neq 0$

Asymptotes

$x^2 - x - 6 = 0$

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

$x \neq 3$ $x \neq -2$

$\boxed{(-\infty, -2) \cup (-2, 3) \cup (3, \infty)}$

Find the difference Quotient and simplify.

79) $f(x) = 2x^2 + 3x - 1$, $\frac{f(x+h) - f(x)}{h}$, $h \neq 0$

$f(x+h) = 2(x+h)^2 + 3(x+h) - 1$

$= 2(x+h)(x+h) + 3x + 3h - 1$

$= 2[x^2 + 2xh + h^2] + 3x + 3h - 1$

$= \underline{2x^2 + 4xh + 2h^2 + 3x + 3h - 1}$

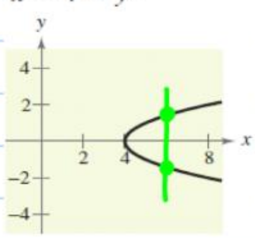
$f(x) = \underline{2x^2 + 3x - 1}$

Diff. Quotient: $= \frac{\cancel{2x^2} + 4xh + 2h^2 \cancel{+3x} + 3h \cancel{-1} - (\cancel{2x^2} \cancel{+3x} \cancel{-1})}{h}$

$= \frac{4xh + 2h^2 + 3h}{h} = \frac{\cancel{h}(4x + 2h + 3)}{\cancel{h}} = \boxed{4x + 2h + 3,\ h \neq 0}$

1.5

83) $x - 4 = y^2$



not a function
Fails vertical
line test.

85) Find the zeros algebraically $f(x) = 3x^2 - 16x + 21$

$(3x - 7)(x - 3) = 0$

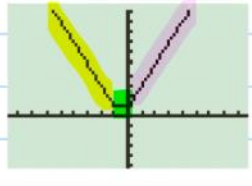
$3x - 7 = 0$ | $x - 3 = 0$

$3x = 7$

$\boxed{x = 7/3}$ $\boxed{x = 3}$

89) Determine the interval over which the function is increasing, decreasing, or constant. (graph given)

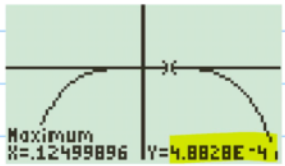
$f(x) = |x| + |x+1|$



Decreasing on $(-\infty, -1)$
Constant on $(-1, 0)$
Increasing on $(0, \infty)$

use graphing calculator to find relative maximums & minimums
(Round to 2 decimal places.)

93) $f(x) = x^3 - 6x^4$



* zoom in

$\nwarrow$ 4.882×10^{-4}

$.00048 \approx 0$

$\boxed{\text{Relative max at } (.12, 0)}$

Determine whether the function is even, odd, or neither.

* A function is even if $f(-x) = f(x)$
* A function is odd if $f(-x) = -f(x)$

99) $f(x) = x^5 + 4x - 7$

$f(-x) = (-x)^5 + 4(-x) - 7$

$= -x^5 - 4x - 7$

$\neq f(x) \quad \neq -f(x)$

$\boxed{\text{neither even or odd}}$

100) $f(x) = x^4 - 20x^2$

$f(-x) = (-x)^4 - 20(-x)^2$

$= x^4 - 20x^2$

$= f(x)$

$\boxed{\text{Even}}$