SM 121 1/6/7/17/20/23/25/37/39/50/57/64 25AUG08

LESSON 3.

REPRESENTING FUNCTIONS

(1)

a) $f(-1) = -2$

b) $f(2) = 2.75$

c) $f(x) = 2$, $x = -3$, $y = 1$

d) $f(x) = 0$, $x = -\frac{5}{2}$, $x = \frac{1}{2}$

e) $D = [-3, 3]$

$E = [-2, 3]$

f) f IS INCREASING ON $[-1, 3]$

(6)

IS A FUNCTION

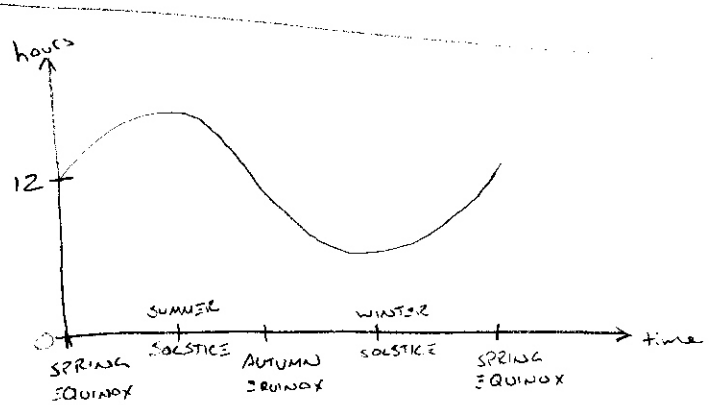
$D = [-2, 2]$ $E = [-1, 2]$

(7)

IS A FUNCTION

$D = [-3, 2]$ $E = [-3, -2) \cup [-1, 3]$

(12)



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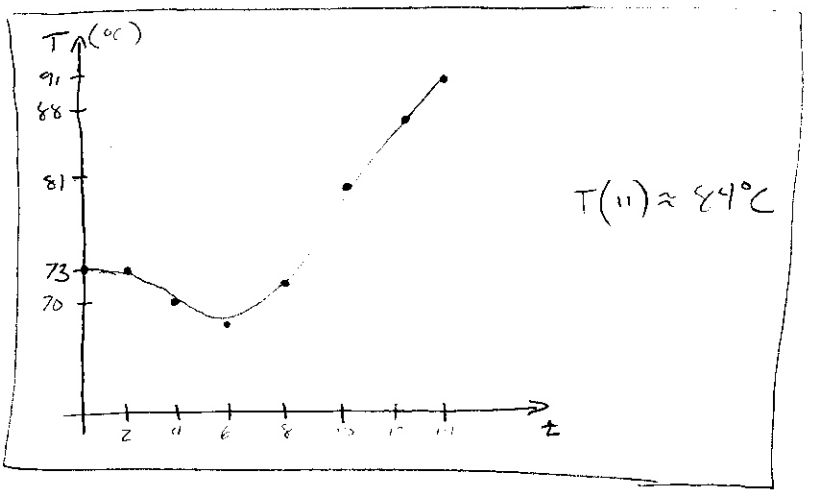
(20)



$T(11) \approx 84°C$

(23)

$f(x) = 4 + 3x - x^2$

$f(3+h) = 4 + 3(3+h) - (3+h)^2$

$= 4 + 9 + 3h - (9 + 6h + h^2)$

$= 4 + 9 + 3h - 9 - 6h - h^2$

$= -h^2 - 3h + 4$

$f(3) = 4 + 3(3) - (3)^2$

$= 4 + 9 - 9$

$= 4$

$$\frac{f(3+h) - f(3)}{h}$$

$$\frac{-h^2 - 3h + 4 - 4}{h}$$

$$\frac{-h^2 - 3h}{h}$$

$$\frac{\cancel{h}(-h-3)}{\cancel{h}}$$

$$\boxed{-h-3}$$

(25) $f(x) = \frac{1}{x}$

$$\frac{f(x) - f(a)}{x - a}$$

$$\frac{\frac{1}{x} - \frac{1}{a}}{x - a}$$

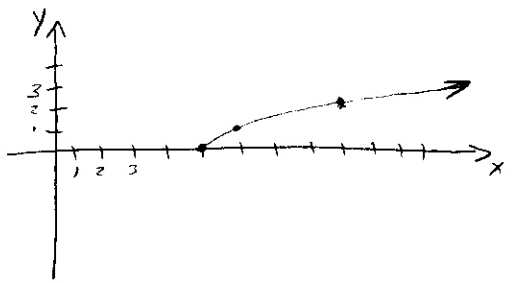
$$\frac{\frac{a-x}{xa}}{x-a} = \left(\frac{a-x}{xa}\right)\left(\frac{1}{x-a}\right) = \left(\frac{\cancel{a-x}}{xa}\right)(-1)\left(\frac{1}{\cancel{a-x}}\right) = \boxed{\frac{-1}{xa}}$$

LESSON 3 25 AUG 08

(37) FIND DOMAIN AND SKETCH GRAPH OF $g(x) = \sqrt{x-5}$

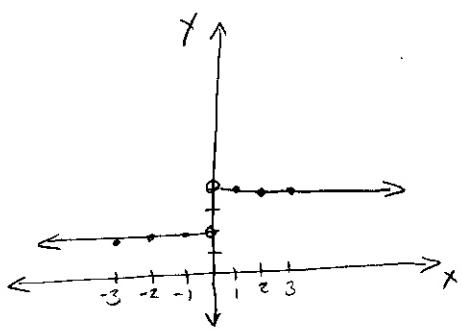
$D = \{x \mid x - 5 \geq 0\}$

$D = \{x \mid x \geq 5\}$



(39) FIND DOMAIN AND SKETCH GRAPH OF $G(x) \quad \frac{3x + |x|}{x}$

$D = (-\infty, 0) \cup (0, \infty)$



$$G(x) = \begin{cases} \frac{3x+x}{x} & \text{if } x > 0 \\ \frac{3x-x}{x} & \text{if } x < 0 \end{cases}$$

$$G(x) = \begin{cases} \frac{4x}{x} & \text{if } x > 0 \\ \frac{2x}{x} & \text{if } x < 0 \end{cases}$$

$$G(x) = \begin{cases} 4 & \text{if } x > 0 \\ 2 & \text{if } x < 0 \end{cases}$$

(50)

$$f(x) = \begin{cases} -\frac{3}{2}x - 3, & \text{if } -4 \leq x < 2 \\ \sqrt{4 - x^2}, & \text{if } -2 \leq x \leq 2 \\ \frac{3}{2}x - 3, & \text{if } 2 < x \leq 4 \end{cases}$$

$m = -\frac{3}{2}$ THROUGH $(-2, 0)$

$y - 0 = -\frac{3}{2}(x - (-2))$

$y = -\frac{3}{2}x - 3$

$x^2 + y^2 = 4$

$y^2 = 4 - x^2$

$y = \sqrt{4 - x^2}$

$m = \frac{3}{2}$ THROUGH $(2, 0)$

$y - 0 = \frac{3}{2}(x - 2)$

$y = \frac{3}{2}x - 3$

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(57) $V = hwd$

$w = 12 - 2x$

$d = 20 - 2x$

$h = x$

$$V = (12-2x)(20-2x)(x)$$

$$= (240 - 24x - 40x + 4x^2)(x)$$

$$= (240 - 64x + 4x^2)(x)$$

$$= 4(60 - 16x + x^2)(x)$$

$$\boxed{V = 4x(60 - 16x + x^2), \quad D: 0 < x < 6}$$

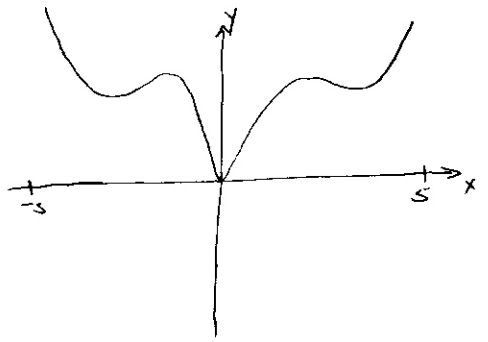
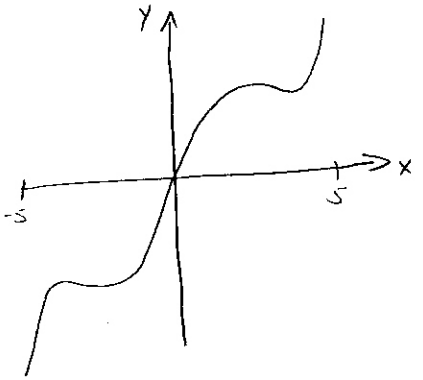
$w > 0$

$12 - 2x > 0$

$-2x > -12$

$x < 6$

(64) a) f is EVEN



b) f is ODD