

Friday 5/8 10.1.1 Pmg 1 (delete 10-12 stats
 (10-7 → 10-14)

10-7) a) $t(n) = 50 + 5(n-1) = 50 + 5(24-1) = 50 + 5(23)$
 $= \$165$

b) $t(n) = 50 + 5(n-1)$

c) $50 + 55 + 60 + 65 + 70 + 75 + 80 + 85 + 90 + 95 + 100 + 105$
 $\$930$

$n=4$ for each hour

10-8) a) $t(n) = 300 + 250(n-1)$

$= 300 + 250(16-1) = 300 + 250(15) = 4050$
 people

$n=4+4+4+4$

b) $300 + 550 + 800 + \dots + 4050$

$t(n) = 300 + 250(n-1)$

10-9) a) $t(n) = 3 + 7(n-1)$

b) $t(n) = 20 - 9(n-1)$

10-10) difference between 13 } -29 is -42

difference of 14 terms so common diff = $\frac{-42}{14} = -3$

1st term = $13 + 3 + 3 = 19$

$t(n) = 19 - 3(n-1)$

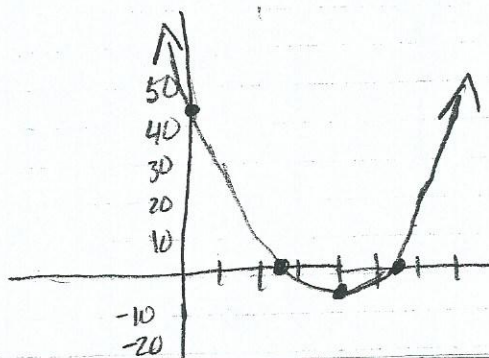
$t(8) = 19 - 3(8-1) = 19 - 21 = -2$

10-11) a) $f(x) = 3(x-4)^2 - 5$

vertex = (4, -5)

y-int = $48 - 5 = 43$
 (0, 43)

x-int (2.7, 0)
 (5.3, 0)



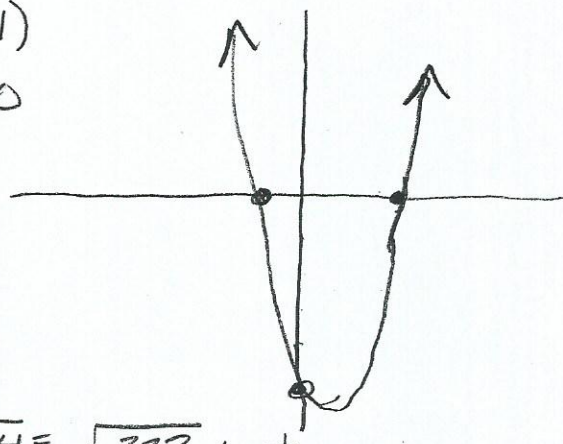
10-11 b) $g(x) = 2x^2 - 3x - 5$

x-int: $(-1, 0)$
 $(2.5, 0)$

y-int = -5
 $(0, -5)$

$2x^2 + 2x - 5x - 5$
 $2x(x+1) - 5(x+1)$
 $(2x-5)(x+1) = 0$
 $x = 2.5 \quad x = -1$

Area = $\frac{-10}{-5} \cdot \frac{1}{2}$



10-13) a) $\sqrt{(-4-2)^2 + (2-6)^2}$
 $\sqrt{(-13)^2 + (-4)^2} = \sqrt{169+16} = \sqrt{233}$ units

b) $\sqrt{(x-5)^2 + (y-2)^2}$ units

10-14) $3r + 4b = 8.53$
 $2(4r + 2b) = 7.74$

$3r + 4b = 8.53$
 $-8r - 4b = -15.48$

 $-5r = -6.95$
 $\frac{-5r}{-5} = \frac{-6.95}{-5}$
 $r = 1.39$

$3(1.39) + 4b = 8.53$
 $4b = 8.53 - 4.17$
 $\frac{4b}{4} = \frac{4.36}{4}$
 $b = 1.09$

Jenel $\Rightarrow 9(1.39) + 7(1.09) = \boxed{\$20.14}$

10.1.1 Day 2 (Tues/Wed) 5/12 & 5/13 (10-15 - 10-24)
 delete 10-20, 10-21

10-15) $\frac{(300 + 4050)}{2} (16) = 34800$ people

16 = 4 hrs (4:15 min intervals)

10-16) $t(1) = 13 + 3(0) = 13$
 $t(20) = 13 + 3(20-1) = 13 + 3(19) = 50$

$\frac{(13+50)(20)}{2} = \boxed{830 \text{ min}}$

Yes they will fit

$$10-17) \quad t(n) = 1 + 5(n-1) \quad \frac{(1+46)(10)}{2} = 235$$

$$t(10) = 1 + 5(9) = 46$$

$$10-18) \quad t(9) = 18 \quad t(5) = 6$$

$$\frac{18-6}{4} = \frac{12}{4} = 3$$

$$1 + 3 + 0 + 3 + 6 + 9 + 12 + 15 + 18$$

$$10-19) \quad t(n) = 3 + 8(n-1) \quad n-1 = 54$$

$$435 = 3 + 8(n-1) \quad n = 55$$

$$\frac{432}{8} = \frac{8(n-1)}{8}$$

Yes, the 55th term

10-22)

For \pm root
 $\sqrt{b^2 - 4ac} = 0$

$$\sqrt{n^2 - 72}$$

$$\sqrt{n^2 - 4(2)(9)} = 0$$

$$n = \pm \sqrt{36 \cdot 2}$$

$$(\sqrt{n^2 - 72})^2 = 0$$

$$\boxed{n = \pm 6\sqrt{2}}$$

$$n^2 - 72 = 0$$

$$10-23) \quad a) \quad \log 4 + \log 25 = \log 100$$

$$10^x = 100$$

$$\boxed{x = 2}$$

$$b) \quad \frac{7 \log_7(3)}{\log_5 5^4}$$

$$\boxed{\frac{3}{4}}$$

$$10-24) \quad f(x) = \sin(x)$$

a) looks like an endless wave repeating the original cycle over and over again

b) A polynomial of degree n has at most n roots but $f(x) = \sin(x)$ has infinitely many roots. Also every polynomial eventually heads away from the x -axis

10.1.2 Tuesday 5/11 } 5/12 (10-34 → 10-42)
delete 36, 37, 41

10-34) a) odds: $t(n) = 1 + 2(n-1)$

evens: $t(n) = 2 + 2(n-1)$

terms

$$2 = \frac{150 - 2}{n - 1}$$

b) odds: $(1 + 144) \frac{75}{2} = \boxed{5625}$

$$2n - 2 = 148$$

$$2n = 150$$

$$n = 75$$

evens: $(2 + 150) \frac{75}{2} = \boxed{5700}$

10-35) a) $t(n) = 21 - 4(n-1)$

b) $-4 = \frac{-99 - 21}{n - 1}$

$$-4(n-1) = -120$$

$$-4n + 4 = -120$$

$$-4n = -124$$

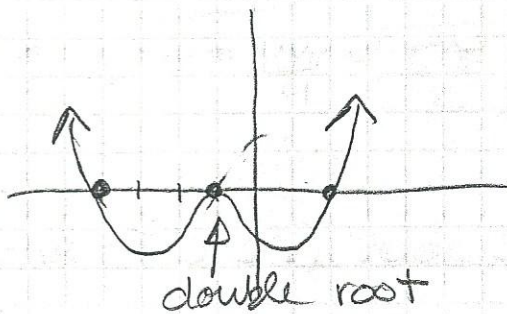
$$\boxed{n = 31}$$

$$(-4) = \frac{-120}{(n-1)}$$

to solve set up the equation to find the common difference, same as calculating slope

c) $(21 + -99) \left(\frac{31}{2}\right)$
 $\boxed{-1209}$

10-38) Degree = 4



10-39) $y = a(x-2)(x+1)(x-3)$

pt (1, 1)

$$1 = a(1-2)(1+1)(1-3)$$

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

$$1 = 4a$$

$$\frac{1}{4} = a$$

$$y = \frac{1}{4}(x-3)(x-2)(x+1)$$

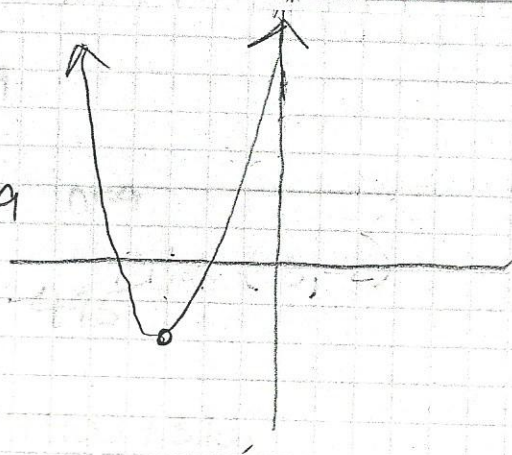
10-40) a) $f(x) = x^2 + 6x + 7$

$f(x) = (x^2 + 6x + 9) + 7 - 9$

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

vertex $(-3, -2)$

y-int $(0, 7)$



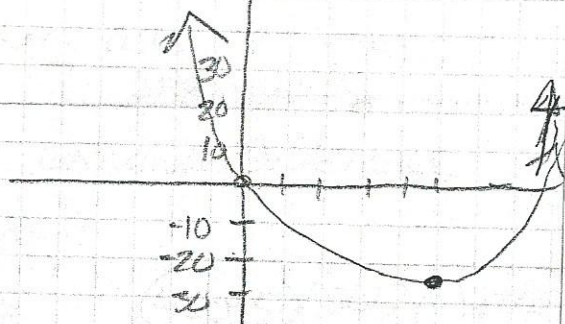
b) $f(x) = x^2 - 10x$

$f(x) = (x^2 - 10x + 25) - 25$

$f(x) = (x-5)^2 - 25$

vertex $(5, -25)$

y-int $(0, 0)$



10-42) a) $45 = \frac{4\pi}{4}$

b) $\frac{75}{360} = \frac{x}{2\pi}$

$x = \frac{15\pi}{360} = \frac{5\pi}{12}$

c) $\frac{-15}{360} = \frac{x}{2\pi}$ $\frac{-30\pi}{360} = x = \frac{-\pi}{12}$

d) $\frac{450}{360} = \frac{x}{2\pi}$ $\frac{900\pi}{360} = x = \frac{10\pi}{4} = \frac{5\pi}{2}$

Thurs 5/14 10.1.3 (10-49 → 10-57) Delete 52

10-49) a) $4 + 1.5 = \frac{400-5}{n-1}$

$5n - 5 = 395$
 $5n = 400$
 $n = 80$

$(5+400) \cdot \frac{80}{2} = 16200$

b) $5 = \frac{398-3}{n-1}$

$5n - 5 = 395$
 $5n = 400$
 $n = 80$

$(3+398) \cdot \frac{80}{2} = 16040$

c) $-6 = \frac{14-80}{n-1}$

$-6n + 6 = -66$
 $-6n = -72$
 $n = 12$

$(80+14) \cdot \frac{12}{2} = 564$