$7, 12, 17 \quad 12-7 = 17-12$

$x+1, 3x, 2x-4 \quad 3x-(x+1) = 2x-4-3x$

difference must be equal

#11/ $5x+2,\ 7x-4,\ 10x+6$

7, 9, 11 ✓

$9-7=11-9$

$(7x-4)-(5x+2)=(10x+6)-(7x-4)$

$2x-6=3x+10$

$-x=16$

$x=-16$

$-78, -116, -154$

$-38 \quad -38$ ✓

Form a geometric sequence... find the 3 terms

$x+1,\ x+7,\ 2x+14$

$\frac{x+7}{x+1} = \frac{2x+14}{x+7}$

$(x+7)^2 = (x+1)(2x+14)$

$x^2+14x+49 = 2x^2+16x+14$

$0 = x^2+2x-35$

$(x+7)(x-5) = 0$

$x = -7, 5$ ✓ ✓

$-6, 0, 0$ $\quad 6, 12, 24$

16. Pg. 13

$t_6 = 11$ $t_{15} = 29$ Arithmetic

(a) $t_n = a + (n-1)d$

$a + 5d = 11$

$a + 14d = 29$

$9d = 18$

$d = 2$

$a + 5(2) = 11$

$a + 10 = 11$

$a = 1$

(a) $t_n = 1 + (n-1)(2)$

$t_n = 1 + 2n - 2$

$\boxed{t_n = 2n - 1}$

(b) $100 = 2n - 1$

$101 = 2n$

$50.5 = n$

day 51

9. $0.75 \times 3$ (1st $n=2$)

$3, 2.25, \ldots$ $n = ?$

$\times 0.75$ $\quad$ $0.75$

a) $t_1 = 3$ $\quad r = 0.75$ $\quad$ (b) $t_n = 3(0.75)^{n-1}$

c) $t_7 = 3(0.75)^6$

$= \underline{0.53 \text{ m}}$

(d) $0.40 = 3(0.75)^{n-1}$

$\frac{0.40}{3} = (0.75)^{n-1}$

$\log\left(\frac{0.40}{3}\right) = \log(0.75)^{n-1}$

$\log\left(\frac{0.40}{3}\right) = (n-1)\log 0.75$

$n = \frac{\log\left(\frac{0.40}{3}\right)}{\log 0.75} + 1$

$n = 8.004\ldots$

# Applications of Sequences

A stamp collector expects his collection will increase in value each year. For example, if a stamp worth is worth $20 and appreciates 12%/a, what will be its value in 15 years?

20, $22.40
×1.12
$t_2$ is value after 1 year

$t_{16} = 20(1.12)^{15}$
$= \$109.47$

A watch dropped from the Calgary Tower falls 4.9 m in the first second, 14.7 m in the next second, 24.5 m in the third second, and so on. How far does the watch fall during the 10th second?

4.9, 14.7, 24.5
9.8, 9.8

$t_{10} = 4.9 + (9)(9.8)$
$= 93.1 m$

# Homework:

Worksheet: Applications of Sequences

Attachments

4.1 Page 206 Questions.pdf

Introductory worksheet.doc

Worksheet - Simplifying Radicals (Square Roots).pdf

arithmetic and geometric sequences.doc

applications of sequences.doc