

$5+5+5+5+5+5+5+5+5+5+5+\dots = \infty$

3f) $\frac{6+(-6)+(-6)+(-6)+\dots+(-6)}{0} = 0$

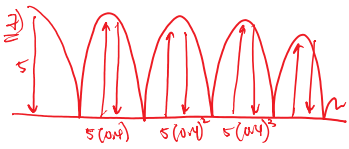
3) $a=3 \quad S_{\infty}=10 \quad r=?$

$S = \frac{a}{1-r}$
 $\frac{10}{5} = \frac{3}{1-r}$
 $1-r = \frac{3}{10}$
 $1-r = 0.3$
 $r = 0.7$
 $3, 3(0.7), 3(0.7)^2$

5) $a=3$
 $S=10$
 $S = \frac{a}{1-r}$
 $10 = \frac{3}{1-r}$
 $1-r = \frac{3}{10}$
 $r = \frac{7}{10}$
 $\frac{10}{2} = 5$
 $\frac{10}{5} = 2$

4f) $24 = 12 + 6 - 3 + 1.5 - \dots$

$a=24 \quad r=-0.5$
 $S = \frac{24}{1+0.5} = \frac{24}{1.5} = 16$
 $24 \div \frac{3}{2} = 16$
 $24 \times \frac{2}{3} = 16$



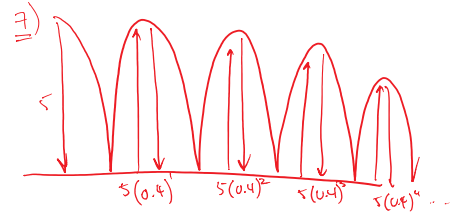
$a=5 \quad r=0.4$
 $\text{Total} = S_{\infty} \times 2 - 5$
 $= \left(\frac{5}{1-0.4}\right) \times 2 - 5 = 11.67 \text{ m}$

10) $a=30,000 \quad r=0.95$
 $S = \frac{30,000}{1-0.95}$

11) Finite Sum \rightarrow Convergent $-1 < r < 1$

$1 + \left(\frac{x}{3}\right) + \left(\frac{x}{3}\right)^2 + \left(\frac{x}{3}\right)^3 + \left(\frac{x}{3}\right)^4 + \dots$

$-1 < \frac{x}{3} < 1$
 $-3 < x < 3$
 $-1 < \frac{x}{3} \implies \frac{x}{3} < 1 \implies x < 3$
 $-3 < x \implies x > -3$
 $-3 < x < 3$



$\text{Total} = (S) \times 2 - 5$
 $V.D. = \left(\frac{5}{1-0.4}\right) \times 2 - 5$
 $a=5 \quad r=0.4$

11) "Finite Sum" \rightarrow Convergent
 $-1 < r < 1$

$1 + \frac{x}{3} + \left(\frac{x}{3}\right)^2 + \left(\frac{x}{3}\right)^3 + \dots$

$-1 < \frac{x}{3} < 1$
 $-3 < x < 3$

3f) $\frac{6+(-6)+(-6)+(-6)+\dots+(-6)}{0}$

~~$S = \frac{a}{1-r}$~~

12) $-1 < r < 1$

$1 + 2x + 4x^2 + 8x^3 + \dots$

$r=2x$

$-1 < 2x < 1$

$-\frac{1}{2} < x < \frac{1}{2}$

By Reason More

1. Divergent: $r > 1$ or $r < (-1) \rightarrow$ answer is ∞
 Convergent: $r < 1$ or $r > (-1)$

2. A G.M. is divergent when the less than (-1) . convergent when r

3. a) ∞ B) 32

c) 81 d) ∞

e) $\frac{27}{8}$ f) $-6, 0, 6$

4. a) $S_{\infty} = 40.5$

b) $S_{\infty} = 20$

c) $S_{\infty} = \frac{1}{3}$

d) $S_{\infty} = 16$

e) $S_{\infty} = 20$

f) $S_{\infty} = 16$

g) $S_{\infty} = 9$

h) $S_{\infty} = \frac{20}{9}$

5. $r = 0.7$

$\frac{3}{1}, \frac{21}{1}, \frac{1.47}{1}$

6. $a = 12$

$12, 4.8, 1.92$

* 7. $a = 5$

$r = 0.4$

$S_{\infty} = 8.\bar{3}$

11.6 m

or $-\infty$

ratio is more than 7 or

ratio is between (-1) and 1

$$8. \quad \underline{1.4}, \underline{0.56}, \underline{0.224}$$

$$9. \quad \underline{6}, \underline{4.5}, \underline{3.375}, \underline{2.5}, \underline{1.9}, \underline{1.4}, \underline{1.05}, \boxed{0.8}$$

$$*10. \quad S_{\infty} = \frac{30,000}{1 - 0.95}$$

$$\boxed{S_{\infty} = 600,000}$$

$$11. \quad \text{area} \neq \text{less than } 3 \quad \boxed{X < 3}$$



11. any # less than 3 $x < 3$

12. any # less than $\frac{1}{2}$ $x < 0.5$
 $x < \frac{1}{2}$