

HW108

A2

$$1. S_{\infty} = \frac{108}{1-1/3} = 162$$

$$2. S_{\infty} = \frac{8}{1-0.75} = 32$$

3. ~~S_{\infty}~~ none, $r > 1$

$$4. S_{\infty} = \frac{-800}{1-.25} = -1066 \frac{2}{3}$$

$$5. n=1 \rightarrow u_1 = \frac{4}{5}^{-1} = 1$$

$$S_{\infty} = \frac{1}{1-4/5} = 5$$

$$6. S_6 = \frac{2(1-0.3^6)}{1-0.3}$$

$$S_6 = 2.86$$

$$7. S_{\infty} = \frac{4}{1-0.4} = \frac{4}{.4} = 10$$

$$8. S_{\infty} = \frac{96}{1-1/2} = 192$$

$$9. u_1 = 2 \rightarrow S_{14} = \frac{2(1-1.2^{14})}{1-1.2}$$

$$S_{14} = 118.4$$

$$10. -90 = \frac{-30}{1-r}$$

$$-90 + 90r = -30$$

$$90r = 60$$

$$r = 6/9 = \boxed{2/3}$$

$$11. -231.25 = \frac{-100(1-r^3)}{1-r}$$

$$-231.25 + 231.25r = -100 + 100r^3$$

$$-131.25 = 100r^3 - 231.25r$$

$$\cancel{-131.25} = \cancel{r(100r^2 - 231.25)}$$

$$0 = 100r^3 - 231.25r + 131.25$$

$$12. 12 = \frac{u_1}{1-1/4}$$

$$\boxed{9 = u_1}$$

$$13. 3 = \frac{1}{1-r}$$

$$3 - 3r = 1$$

$$-3r = -2$$

$$r = 2/3$$

$$\boxed{1, 2/3, 4/9, 8/27}$$

$$14. 70 = \frac{u_1}{1-0.6}$$

$$28 = u_1$$

$$\boxed{28, 16.8, 10.08, 6.048}$$

BOOKWORK

$$3. a) 0.123 + 0.000123 + \dots$$

$$b) r = 0.001 \quad u_1 = 0.123$$

$$c) S_{\infty} = \frac{0.123}{1-0.001} = \frac{123}{999} = \frac{41}{33}$$

$$4. 400 = \frac{20}{1-r}$$

$$400 - 400r = 20$$

$$-400r = -380$$

$$r = 0.95$$

$$\boxed{20, 19, 18.05, 17.15}$$

p528

$$1. a) 0.\overline{1} = 0.1 + 0.01 + 0.001 + \dots$$

$$b) r = 0.1 \quad u_1 = 0.1$$

$$c) S_{\infty} = \frac{0.1}{1-0.1} = \frac{.1}{.9} = \frac{1}{9}$$

$$2. a) 0.\overline{47} = 0.47 + 0.0047 + 0.000047 + \dots$$

$$b) r = 0.01 \quad u_1 = 0.47$$

$$c) S_{\infty} = \frac{0.47}{1-0.01} = \frac{0.47}{0.99} = \frac{47}{99}$$