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20. $0.444 = 0.4 + 0.04 + 0.004 + \dots$

$r = 0.1 \quad a_1 = 0.4 \quad S_{\infty} = \frac{0.4}{1-0.1} = \frac{.4}{.9} = \boxed{\frac{4}{9}}$

22. $0.625625625 = 0.625 + 0.000625 + 0.000000625 + \dots$

$r = .001 \quad a_1 = 0.625 \quad S_{\infty} = \frac{0.625}{1-.001} = \frac{.625}{.999} = \boxed{\frac{625}{999}}$

24. $130.130130130\dots$ Watch out!

$130 + 0.130 + .000130 + .000000130 + \dots$



This is the geometric series $r = .001$
 $a_1 = 0.130$

$130 + \frac{0.130}{1-.001} = 130 + \frac{.130}{.999} = 130 + \frac{130}{999}$

$= 130 \frac{130}{999}$
 $= \frac{130,000}{999}$

32. exponential

34) arithmetic

36) geometric

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8) $1, -9, 71, 5031, \underline{29,310,951}, 640644240524000.$

72) $2\sqrt{x} - 5 = 15$

$2\sqrt{x} = 20$

$\sqrt{x} = 10$

$X = 100$

74) $2\sqrt[3]{x} - 13 = -5$

$2\sqrt[3]{x} = 8$

$\sqrt[3]{x} = 4$

$x = (4)^3$

$X = 64$

76) x varies inversely as y means $x \cdot y = k$

$xy = k$

$(-4)(3) = k$

$k = -12$

EQN: $xy = -12$

Use it to find y when $x = 4$

$y = -3$