

Practice for 11.2 Geometric Series**Name:**

1. Determine whether the series is convergent or divergent. If it is convergent, find its limit.

a)
$$\sum_{n=1}^{\infty} \frac{3^{n-1} + 2^{n+2}}{5^{n-1}}$$

b)
$$\sum_{n=1}^{\infty} \frac{(2n+1)^2}{7n^2 + 3n - 1}$$

c)
$$\sum_{n=1}^{\infty} \left(\frac{7}{5^n} - \frac{2}{n} \right)$$

d)
$$\sum_{n=1}^{\infty} \left(\frac{7}{n(2n-1)} - \frac{3}{7^{n+1}} \right)$$

e)
$$\sum_{n=1}^{\infty} \left(\frac{1}{\sqrt{n}} - \frac{1}{\sqrt{n+1}} \right)$$

f)
$$\sum_{n=1}^{\infty} \left[e^{\frac{1}{n+1}} - e^{\frac{1}{n+2}} \right]$$

g)
$$\sum_{n=1}^{\infty} \left(1 - \frac{1}{n}\right)^n$$

h)
$$\sum_{n=1}^{\infty} \frac{e^{n\pi}}{\pi^{ne}}$$

2. Find the values of x for which the series converges. Find the sum of the series for those values of x :

a)
$$\sum_{n=1}^{\infty} 3^{n-1} x^n$$

b)
$$\sum_{n=0}^{\infty} \frac{(x+5)^n}{5^{2n-1}}$$

c)
$$\sum_{n=0}^{\infty} \left(-\frac{1}{2}\right)^n (x-3)^n$$

d)
$$\sum_{n=0}^{\infty} (-1)^n x^{-2n}$$