Negative Exponents Continued

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A. Exponent Laws

    4) Negative Exponent Law

$$a^{-m} = \frac{1}{a^m}$$

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a) 3^{-3} $= \dfrac{1}{3^3} = \boxed{\dfrac{1}{27}}$

b) -5^{-2} $= \dfrac{-1}{5^2} = \boxed{\dfrac{-1}{25}}$

c) $(-2)^{-3}$ $= \dfrac{1}{(-2)^3} = \dfrac{1}{-8} = \boxed{-\dfrac{1}{8} \ \text{or} \ \dfrac{-1}{8}}$

d) $\left(\dfrac{2}{3}\right)^{-3}$ $= \dfrac{(2)^{-3}}{(3)^{-3}} = \dfrac{(3)^3}{(2)^3} = \boxed{\dfrac{27}{8}}$

e) $\left(1\dfrac{1}{4}\right)^{-2}$ $= \left(\dfrac{5}{4}\right)^{-2} = \dfrac{(5)^{-2}}{(4)^{-2}} = \dfrac{(4)^2}{(5)^2} = \boxed{\dfrac{16}{25}}$

f) $\ominus\left(\dfrac{4}{7}\right)^{-1}$ $= \dfrac{(4)^{-1}}{(7)^{-1}} = \dfrac{(7)^1}{(4)^1} = \boxed{-\dfrac{7}{4}}$

g) 0.2^{-2} $= \left(\dfrac{2}{10}\right)^{-2} = \left(\dfrac{1}{5}\right)^{-2} = \dfrac{(1)^{-2}}{(5)^{-2}} = \dfrac{(5)^2}{(1)^2} = \boxed{\dfrac{32}{1} \text{ or } 32}$

h) 1.2^{-2} $= \left(1\dfrac{2}{10}\right)^{-2} = \left(1\dfrac{1}{5}\right)^{-2} = \left(\dfrac{6}{5}\right)^{-2} = \dfrac{(6)^{-2}}{(5)^{-2}} = \dfrac{(5)^2}{(6)^2} = \boxed{\dfrac{25}{36}}$

i) $(-0.1)^{-2}$ $= \left(-\dfrac{1}{10}\right)^{-2} = \dfrac{(-1)^{-2}}{(10)^{-2}} = \dfrac{(10)^2}{(-1)^2} = \boxed{\dfrac{100}{1} \text{ or } 100}$

Assignment: Negative Exponents Assignment

Negative Exponents Assignment

1. Evaluate the following.

a) 5^{-3}

b) $\left(\dfrac{1}{2}\right)^{-5}$

c) -4^{-2}

d) 0.7^{-2}

e) $-\left(\dfrac{1}{3}\right)^{-1}$

f) $(-7)^{-2}$

g) $(-0.3)^{-2}$

h) 2^{-5}

i) $\left(\dfrac{3}{4}\right)^{-3}$

j) $\left(1\dfrac{1}{2}\right)^{-4}$

k) 0.1^{-3}

l) $\left(-2\dfrac{1}{2}\right)^{-2}$

m) $-\left(-3\right)^{-3}$

n) $\left(\dfrac{5}{9}\right)^{-1}$

o) -4^{-3}

p) $\left(\dfrac{1}{2}\right)^{-4}$

q) 1.4^{-2}

r) $\left(\dfrac{1}{8}\right)^{-2}$

Answers

a) $\dfrac{1}{125}$ b) 32 c) $-\dfrac{1}{16}$ d) $\dfrac{100}{49}$ e) -3 f) $\dfrac{1}{49}$

g) $\dfrac{100}{9}$ h) $\dfrac{1}{32}$ i) $\dfrac{64}{27}$ j) $\dfrac{16}{81}$ k) 1000 l) $\dfrac{4}{25}$

m) $\dfrac{1}{27}$ n) $\dfrac{9}{5}$ o) $-\dfrac{1}{64}$ p) 16 q) $\dfrac{25}{49}$ r) 64