

Problems for Gateway #3: Solving Power and Radical Equations

1. The value of x that solves the equation:

$$2 \cdot x^4 = 9$$

is:

(a) $x = \frac{\log(9)}{\log(2)}$

(b) $x = \left(\frac{2}{4}\right)^{\frac{1}{4}}$

(c) $x = \frac{\log(9)}{4 \cdot \log(2)}$

(d) $x = \left(\frac{9}{2}\right)^{\frac{1}{4}}$

(e) $x = (7)^{\frac{1}{4}}$

2. The value of x that solves the equation:

$$4 \cdot x^5 = 10$$

is:

(a) $x = \left(\frac{1}{4}\right)^{\frac{1}{10}}$

(b) $x = \left(\frac{10}{4}\right)^{\frac{1}{5}}$

(c) $x = \left(\frac{5}{4}\right)^{\frac{1}{10}}$

(d) $x = \frac{\log(10)}{5 \cdot \log(4)}$

(e) $x = \left(\frac{\log(10)}{\log(4)}\right)^{\frac{1}{5}}$

3. The value of x that solves the equation:

$$7 \cdot x^6 = 6$$

is:

(a) $x = \left(\frac{6}{7}\right)^{\frac{1}{6}}$

(b) $x = \left(\frac{8}{6}\right)^{\frac{1}{17}}$

(c) $x = \left(\frac{\log(6)}{\log(8)}\right)^{\frac{1}{6}}$

(d) $x = \frac{6}{42}$

(e) $x = \frac{36}{7}$

4. The value of x that solves the equation:

$$10 \cdot x^2 = 3$$

is:

(a) $x = \frac{\log(3) - \log(10)}{2}$

(b) $x = \frac{\log(3)}{20}$

(c) $x = \left(\frac{3}{10}\right)^{\frac{1}{2}}$

(d) $x = \frac{7}{2}$

(e) $x = \left(\frac{10}{3}\right)^2$

5. The value of x that solves the equation:

$$11 \cdot x^7 = 12$$

is:

(a) $x = \left(\frac{1}{7}\right)^{12}$

(b) $x = \frac{\log(12)}{7 \cdot \log(11)}$

(c) $x = \frac{\log(12) - \log(11)}{7}$

(d) $x = \left(\frac{7}{11}\right)^{\frac{1}{12}}$

(e) $x = \left(\frac{12}{11}\right)^{\frac{1}{7}}$

6. The value of x that solves the equation:

$$3 \cdot x^8 = 13$$

is:

(a) $x = \frac{13}{24}$

(b) $x = \frac{\log(13) - \log(3)}{8}$

(c) $x = \left(\frac{13}{3}\right)^{\frac{1}{8}}$

(d) $x = \frac{\log(13)}{8 \cdot \log(3)}$

(e) $x = \frac{1}{8} \cdot 13^{\frac{1}{3}}$

7. The value of x that solves the equation:

$$4 \cdot x^{16} = 63$$

is:

(a) $x = \frac{\log(63) - \log(4)}{16}$

(b) $x = \frac{\log(63)}{16 \cdot \log(4)}$

(c) $x = \frac{\log(63)}{4 \cdot \log(16)}$

(d) $x = \left(\frac{63}{16}\right)^{\frac{1}{63}}$

(e) $x = \left(\frac{63}{4}\right)^{\frac{1}{16}}$

8. The value of x that solves the equation:

$$5 \cdot x^{10} = 12$$

is:

(a) $x = \left(\frac{1}{2}\right)^{12}$

(b) $x = \frac{\log(12)}{5 \cdot \log(10)}$

(c) $x = \frac{\log(12) - \log(5)}{10}$

(d) $x = \left(\frac{12}{5}\right)^{\frac{1}{10}}$

(e) $x = \left(\frac{12}{10}\right)^{\frac{1}{5}}$

9. The value of x that solves the equation:

$$6 \cdot x^7 = 83$$

is:

(a) $x = \left(\frac{6}{7}\right)^{\frac{1}{83}}$

(b) $x = \left(\frac{83}{6}\right)^{\frac{1}{7}}$

(c) $x = \frac{\log(83) - \log(6)}{7}$

(d) $x = \left(\frac{83}{7}\right)^{\frac{1}{6}}$

(e) $x = \frac{\log(83)}{7 \cdot \log(6)}$

10. The value of x that solves the equation:

$$7 \cdot x^{81} = 40$$

is:

(a) $x = \left(\frac{40}{7}\right)^{\frac{1}{81}}$

(b) $x = \left(\frac{7}{40}\right)^{81}$

(c) $x = \frac{\log(40)}{\log(7)}$

(d) $x = \frac{\log(x)}{81 \cdot \log\left(\frac{40}{7}\right)}$

(e) $x = \frac{81 - 40}{7}$

ANSWERS:

1. D
5. E
9. B

2. B
6. C
10. A

3. A
7. E

4. C
8. D