1. Simplify the expression. Assume that all variables represent positive real numbers.

$$\theta^{-\frac{5}{4}}\theta^{-\frac{2}{5}}$$

A. $\theta^{-\frac{1}{2}}$

B. $\theta^{-\frac{73}{20}}$

C. $\theta^{-\frac{3}{2}}$

D. $\theta^{\frac{1}{2}}$

E. $\theta^{-\frac{53}{20}}$

F. $\theta^{-\frac{33}{20}}$

G. $\theta^{-\frac{49}{20}}$

H. $\theta^{-\frac{3}{10}}$

2. Represent each expression by using radical notation, and evaluate the expression.

$$16^{-\frac{3}{4}}$$

A. $-\left(\sqrt[3]{16^2}\right)^4 = -1$

B. $\frac{1}{\left(\sqrt[4]{16}\right)^3} = 1$

C. $\frac{1}{\left(\sqrt[4]{16}\right)^3} = \frac{1}{64}$

D. $\frac{1}{\left(\sqrt[4]{16}\right)^3} = \frac{1}{8}$

E. $\frac{1}{\left(\sqrt[4]{16}\right)^3} = \frac{1}{27}$

F. $-\left(\sqrt[3]{16^2}\right)^4 = -8$

G. $-\left(\sqrt[3]{16^2}\right)^4 = -64$

H. $-\left(\sqrt[3]{16^2}\right)^4 = -27$

3. Perform the indicated multiplication and simplify the product. Assume that the variables represent nonnegative real numbers, so that absolute value notation is not necessary.

$$7\zeta^{\frac{1}{2}}(4\zeta^{\frac{1}{2}} - 5)$$

A. $28\zeta - 35$

B. $28(2\zeta)^{\frac{1}{2}} - 35\zeta^{\frac{1}{2}}$

C. $-7\zeta^{\frac{1}{2}}$

D. $28\zeta^{\frac{1}{2}} - 35$

E. $28\zeta - 35(\zeta)^{\frac{1}{2}}$

F. $\frac{-7}{\zeta^{\frac{1}{2}}}$

G. -7ζ

H. $28\zeta^{\frac{1}{2}} - 35\zeta$

4. Represent each expression by using radical notation, and evaluate the expression.

$$\left(\frac{8}{27}\right)^{\frac{2}{3}}$$

A. $\sqrt{\left(\frac{8}{27}\right)^3} = \frac{4}{9}$

B. $\sqrt[3]{\left(\frac{8}{27}\right)^2} = \frac{25}{36}$

C. $\sqrt{\left(\frac{8}{27}\right)^3} = \frac{9}{16}$

D. $\sqrt{\left(\frac{8}{27}\right)^3} = \frac{16}{25}$

E. $\sqrt[3]{\left(\frac{8}{27}\right)^2} = \frac{9}{16}$

F. $\sqrt[3]{\left(\frac{8}{27}\right)^2} = \frac{4}{9}$

G. $\sqrt{\left(\frac{8}{27}\right)^3} = \frac{25}{4}$

H. $\sqrt[3]{\left(\frac{8}{27}\right)^2} = \frac{16}{25}$

5. Represent the expression by using exponential notation, and evaluate each expression.

$$\sqrt[6]{0.000001}$$

A. $(0.000001)^{-\frac{1}{6}} = \frac{1}{10}$

B. $(0.000001)^{-\frac{1}{7}} = -\frac{7}{30}$

C. $(0.000001)^{-\frac{1}{6}} = -\frac{1}{2}$

D. $(0.000001)^{\frac{1}{7}} = -\frac{7}{30}$

E. $(0.000001)^{\frac{1}{7}} = -\frac{7}{10}$

F. $(0.000001)^{\frac{1}{6}} = -\frac{1}{2}$

G. $(0.000001)^{\frac{1}{6}} = \frac{1}{10}$

H. $(0.000001)^{-\frac{1}{7}} = -\frac{7}{10}$

6. Represent each expression by using radical notation, and evaluate the expression.

$$1^{\frac{1}{5}}$$

A. $\frac{1}{\sqrt[5]{1}} = 1$

B. $\sqrt[5]{1} = 1$

C. $\frac{1}{\sqrt[6]{1}} = \frac{5}{3}$

D. $\frac{1}{\sqrt[5]{1}} = 3$

E. $\sqrt[5]{1} = 3$

F. $\frac{1}{\sqrt[6]{1}} = \frac{5}{4}$

G. $\sqrt[6]{1} = \frac{5}{3}$

H. $\sqrt[6]{1} = \frac{5}{4}$

7. Simplify the expression. Assume that all variables represent positive real numbers.

$$\frac{\lambda^{-\frac{1}{4}}}{\lambda^{-\frac{3}{5}}}$$

A. $\lambda^{-\frac{1}{10}}$

B. $\lambda^{\frac{11}{10}}$

C. $\lambda^{\frac{3}{20}}$

D. $\lambda^{\frac{3}{20}}$

E. $\lambda^{\frac{27}{20}}$

F. $\lambda^{-\frac{17}{20}}$

G. $\lambda^{\frac{7}{20}}$

H. $\lambda^{-\frac{21}{20}}$

8. Represent each expression by using radical notation, and evaluate the expression.

$$(0.000001)^{-\frac{1}{6}}$$

A. $\frac{1}{\sqrt[6]{0.000001}} = \frac{1}{10}$

B. $\frac{1}{\sqrt[6]{0.000001}} = 10$

C. $\frac{1}{\sqrt[7]{0.000001}} = \frac{1}{2}$

D. $-\sqrt[6]{0.000001} = -\frac{1}{10}$

E. $\frac{1}{\sqrt[7]{0.000001}} = 1$

F. $-\sqrt[7]{0.000001} = -1$

G. $-\sqrt[7]{0.000001} = -2$

H. $-\sqrt[6]{0.000001} = -10$