1. Perform the indicated operations and reduce the result to lowest terms. Assume the variables are restricted to values that prevent division by 0.

$$\frac{5x-2}{x-3} - \frac{\frac{6x-1}{4x^2-5x-21}}{\frac{1-6x}{4x+7}}$$

A. $\frac{5x^2+33x-13}{(1x-3)(6x+1)}$

B. $-\frac{3x^2+33x-13}{(1x-3)(6x+1)}$

C. $\frac{3x}{x-3}$

D. $\frac{3x^2+33x-13}{(1x-3)(6x+1)}$

E. $\frac{5x-4}{x-3}$

F. $-\frac{5x^2+21x-13}{(1x-3)(6x+1)}$

G. $\frac{3x-8}{x-3}$

H. $\frac{5x-1}{x-3}$

2. Perform the indicated operations and reduce the result to lowest terms. Assume the variables are restricted to values that prevent division by 0.

$$\frac{\frac{1}{\psi^2} - \frac{1}{\eta^2}}{\frac{1}{\psi} - \frac{1}{\eta}}$$

A. 1

B. $\frac{\eta}{\psi}$

C. $\frac{\psi+\eta}{\psi\eta}$

D. $\frac{\psi+\eta}{\psi^2\eta^2}$

E. $-\frac{\psi(\psi+\eta)}{(\psi-\eta)^2}$

F. $\frac{1}{\psi\eta}$

G. $\frac{1}{\psi-\eta}$

H. $-\frac{\psi+\eta}{\psi}$

3. Perform the indicated operations and reduce the result to lowest terms. Assume the variables are restricted to values that prevent division by 0.

$$\frac{\frac{16w^2+40w+25}{7w^3-3w^2}}{\frac{28w^2+35w}{21w^2a^2}}$$

A. $\frac{3a^2(4w+5)}{w(7w-3)}$

B. $\frac{4a(5w+4)}{w(3w+7)}$

C. $\frac{3w^2(4a+5)}{a(7a-3)}$

D. 1

E. $\frac{a(7a-3)}{3w^2(4a+5)}$

F. $\frac{7a^2(5a+7)}{w(4w+7)}$

G. $\frac{w(7w-3)}{3a^2(4w+5)}$

H. -1

4. Perform the indicated operations and reduce the result to lowest terms. Assume the variables are restricted to values that prevent division by 0.

$$\frac{\frac{\tau^2-\gamma^2}{\tau^2-2\tau\gamma+\gamma^2}}{\frac{3\tau+3\gamma}{21\tau-12}}$$

A. $\frac{7\tau-4}{\tau-\gamma}$

B. $\frac{\tau-\gamma}{\tau+\gamma}$

C. $\frac{\tau-\gamma}{(-2\tau\gamma)(7\tau-4)}$

D. $\frac{7(\tau-\gamma)}{4(\tau+\gamma)}$

E. $\frac{7\tau-4}{(-2\tau\gamma)(\tau-\gamma)}$

F. $-\frac{7(\tau+\gamma)}{4(\tau-\gamma)}$

G. $\frac{(\tau+\gamma)^2}{(\tau-\gamma)(7\tau-4)}$

H. $\frac{\tau-\gamma}{7\tau-4}$

5. Perform the indicated operations and reduce the result to lowest terms. Assume the variables are restricted to values that prevent division by 0.

$$\frac{12\eta^2 - 49\eta + 44}{\frac{12\eta^2 - 17\eta - 44}{9\eta^2 + 24\eta + 16}}$$

A. -1

B. $(3\eta + 4)(3\eta - 4)$

C. $5\eta(3\eta - 11)$

D. $-\frac{1}{5\eta(3\eta - 11)}$

E. $(4\eta + 11)(4\eta - 11)$

F. $(11\eta + 3)(11\eta - 3)$

G. 1

H. $\frac{1}{5\eta(3\eta - 11)}$

6. Perform the indicated operations and reduce the result to lowest terms. Assume the variables are restricted to values that prevent division by 0.

$$\frac{\frac{1}{kq^2} + \frac{1}{k^2q}}{\frac{1}{q^2} - \frac{1}{k^2}}$$

A. $\frac{k+q}{kq}$

B. $\frac{k+q}{k^2q^2}$

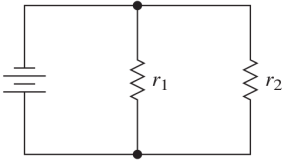C. $-\frac{k+q}{k}$

D. $\frac{1}{k-q}$

E. $\frac{q}{k}$

F. $-\frac{k(k+q)}{(k-q)^2}$

G. $\frac{1}{kq}$

H. 1

7. Electrical Resistance The total resistance R in a parallel circuit with two individual resistors r_1 and r_2 can be calculated by using the formula

$$R = \frac{1}{\frac{1}{r_1} + \frac{1}{r_2}}.$$

Determine R when $r_1 = 15\ \Omega$ and $r_2 = 47\ \Omega$

A. $R = \frac{2256}{95}\ \Omega$

B. $R = \frac{336}{23}\ \Omega$

C. $R = \frac{696}{41}\ \Omega$

D. $R = \frac{705}{62}\ \Omega$

E. $R = \frac{946}{65}\ \Omega$

F. $R = \frac{48}{5}\ \Omega$

G. $R = \frac{903}{64}\ \Omega$

H. $R = \frac{319}{20}\ \Omega$

8. Perform the indicated operations and reduce the result to lowest terms. Assume the variables are restricted to values that prevent division by 0.

$$\frac{\frac{\frac{1}{\theta} - \frac{1}{a}}{\theta a}}{\frac{1 - \frac{\theta}{a}}{1 + \frac{\theta}{a}}}$$

A. $\frac{\theta + a}{\theta a}$

B. $\frac{\theta + a}{\theta^2 a^2}$

C. 1

D. $-\frac{\theta + a}{\theta}$

E. $\frac{a}{\theta}$

F. $\frac{1}{\theta a}$

G. $\frac{1}{\theta - a}$

H. $-\frac{\theta(\theta + a)}{(\theta - a)^2}$