

Final Exam Review

1. Adding/subtracting rational expressions and radical expressions.

A. $\frac{2x-1}{3x^2-5x-2} - \frac{2x+1}{3x^2+7x+2}$

B. $\frac{a}{a-b} - \frac{b}{b-a}$

C. $3\sqrt{2y+1} + 7\sqrt{2y+1}$

D. $3a^{2/3} + 7b^{4/5} + 5a^{2/3} - 3b^{4/5}$

E. $3\sqrt{y} + 5\sqrt{y+1} - 6\sqrt{y} - 7\sqrt{y+1}$

F. $3\frac{7}{15} - 7\frac{6}{35} + 2\frac{5}{6}$

G. $-3\frac{4}{5} - 5\frac{1}{3} + 2\frac{11}{15}$

H. $\frac{3x}{4-x^2} - \frac{x}{2+x} - \frac{4}{x-2}$

I. $3\sqrt{8y^5} - 5x^3\sqrt{16x} + 6y^2\sqrt{2y} - 9^3\sqrt{2x^4}$

Q. $5^3\sqrt{2a^5y^7} + 7ab^2\sqrt{a^3b^2} - 8ay^2\sqrt{54a^2y} - \sqrt[5]{32a^8b^{12}}$

J. $\frac{1-\frac{2}{3}}{2-\frac{4}{5}}$

K. $\frac{\frac{x}{3} - \frac{2}{x}}{\frac{x-1}{a} - \frac{x-1}{b}}$

L. $\frac{\frac{b}{a} - \frac{a}{b}}{\frac{a}{b} + \frac{b}{a}}$

M. $(3x^3 - 5x + 2) - (-4x^3 - 2x^2 + 5x + 7)$

N. $\frac{3a^2}{5b^{10}c^{10}} - \frac{6b^3}{2^2a^{10}c^7}$

O. $-\frac{2a}{b^2cd^3} - \frac{3b^5}{a^2b^{12}d^{12}}$

P. $\frac{(5x+1)}{(x+1)(x-2)} - \frac{(3+x)}{(x-2)(x-1)}$

2. Finding new function rules and value at given point.

A. $f(y) = 4 - \sqrt{y}$, $g(y) = 5y - 2$,

Find $(f - g)(y)$

B. $f(x) = 4 - x^2$, $g(t) = 5x^3 - 2x + 1$,

(a) Find $(f + g)(x)$, and (b) $(f + g)(0)$

C. $f(x) = 3x - 1$, $g(x) = 2x^2 + 1$

(a) Find $\left(\frac{f}{g}\right)(x)$, and (b) Find $\left(\frac{f}{g}\right)(4)$

D. $f(x) = 3x - 1$, $g(x) = x^2 + 1$,

Find $(f \cdot g)(x)$

E. $f(x) = 3x - 1$, $g(x) = x^2 + 1$,

Find $(f \cdot g)(-5)$

F. $f(x) = 3x - 1$, $g(x) = x^2 + 1$,

Find $\left(\frac{f}{g}\right)(x)$

G. $f(x) = 3x - 1$, $g(x) = x^2 + 1$,

Find $\left(\frac{f}{g}\right)(5)$

3. Simplifying using order of operations

A. $\frac{-3 - (-4^2 + 5 \times 3 + 6 \div 2)}{|3 - 5^2|}$

B. $\frac{-2^2 - 5 \times 3^2 - 27 \div 9}{(4 - (-5)^2)^2}$

C. $\frac{-5^2 - (3 - 2^2)^3}{3^2 - 5 + 5 \times 2}$

D. $\frac{2 + 3 \times 5 \div 2}{2 \times 3 - 10 \div 2}$

4. Multiplying and dividing rational expressions

A. $\frac{x^2-9}{x^2+3x-4} \div \frac{3x^2+8x-3}{x^3+64}$

B. $\frac{x^2+2x+1}{1-x^2} \div \frac{5x^2+4x-1}{5x^2-6x+1}$

C. $\frac{x^2-9}{x^2-2x+4} \div \frac{x^2-5x+6}{x^3-8}$

D. $\frac{3x^2-5x-2}{3x^2+7x+2} \times \frac{x^2-9}{x^2-5x+6}$

E. $\frac{x-x^3}{x^2+2x+1} \div \frac{5x^2-6x+1}{5x^4+4x^3-x^2}$

8. Solving absolute value equations and absolute value inequalities.

A. $|x| = \frac{5}{2}$

B. $|2x - 1| = \frac{5}{2}$

C. $|2x - 1| - 3 = \frac{5}{2}$

D. $|x| < \frac{5}{2}$

E. $|3 - 4x| \leq 9$

F. $|2x - 1| + 3 \geq 7$

G. $|1 - 8x| > 9$

H. $|11x + 4| - 3 \leq 7$

9. Solve the equations below for the designated variables.

Solve for y $Ax + By = C$

Solve for q $\frac{p}{q} = rt$

Solve for F $T = \frac{5}{9}(F - 32)$

Solve for T $D = RT$

Solve for x $y = mx + b$

Solve for f $\frac{1}{p} = \frac{1}{f} + \frac{1}{q}$

10. Solve the following equations and check your solutions. If there are any extraneous solutions, please state so.

A. $\sqrt[4]{1-x} = 2$

B. $\sqrt[3]{2+3x} = -1$

C. $\sqrt{3-x} = \sqrt{1+11x}$

D. $\sqrt{2+x} = \sqrt{3-x} + 1$

E. $\sqrt[5]{2x+1} = 2$

F. $\sqrt{t-2} = t-8$

G. $\sqrt{3t-2} = t-2$

H. $\sqrt{6-t} = \sqrt{2t+5}$

I. $\sqrt{x} - 4 = 5$

J. $x^3 = 15$

K. $(1-x)^3 = 8$

L. $(11+3x)^2 = 5$

M. $(4+11x)^5 = 2$

11. Find all the solutions to the following quadratic equations.

A. $3x^2 - 2x + 4 = 0$

B. $5x^2 - 6x - 7 = 0$

C. $x^2 - 4x + 3 = 0$

D. $x^2 - 4x + 3 = 0$

E. $x^2 - 4x + 3 = 0$

F. $x^2 - 4x + 3 = 0$

G. $x^2 - 4x + 3 = 0$

H. $x^2 - 4x + 3 = 0$

I. $5x^2 - x + 4 = 0$

J. $5x^2 - 2x + 7 = 0$

K. $x^2 - x - 1 = 0$

L. $9x^2 - 90x = -25$

M. $2x(x-4) + 3(x+1) = 5(2x-7) + 10$

N. $\frac{x^2}{x^2-9} - \frac{2x+1}{x-3} = 2 + \frac{4-x}{x+3}$

O. $\frac{x}{x^2-9} + \frac{2x+1}{x-3} = 2 + \frac{1-x}{x+3}$

P. $\sqrt{2x^2-x} = 3$

Q. $\frac{x+1}{x-1} = \frac{2x+3}{x-2}$

R. $\sqrt{x-4} = x-11$