

Tue 10-2-18

Domain of a radical - no value is allowed in the domain that results in a negative number under a radical with an even index.

- Take the radicand and set it "greater than or equal to" zero. \geq

ex $\sqrt{3x-15}$

$$3x - 15 \geq 0$$

$$3x \geq 15$$

$$x \geq \frac{15}{3}$$

$$\boxed{x \geq 5}$$

x is any real number such that $x \geq 5$.

Problems from Web Assign

① $3x^2 - 7x + 2$

no fraction
no radicand

all real numbers

② $64x^2 - 49, x > 0$

no fraction
no radicand
but there is a condition

all positive real numbers

⑤ $\sqrt{7x+4}$

radicand

$$7x + 4 \geq 0$$

$$7x \geq -4$$

$$x \geq -\frac{4}{7}$$

all real numbers such that $x \geq -\frac{4}{7}$

Multiplication of Fractions

⑬ $\frac{(x^2+x-20)}{(x^2+8x+16)} \cdot \frac{(x+4)}{(x^2-25)}$

$$\frac{(x+5)(x-4)(x+4)}{(x+4)(x+4)(x-5)(x+5)}$$

* cross out common factors

$$\frac{(x/5)(x-4)(x/4)}{(x/4)(x+4)(x-5)(x/5)}$$

$$\boxed{\frac{(x-4)}{(x+4)(x-5)}}$$

Division of fractions

⑫ $\frac{4y-16}{3y+9} \div \frac{4-y}{9y+27}$

* multiply by the reciprocal

$$\frac{4y-16}{3y+9} \cdot \frac{9y+27}{4-y}$$

$$\frac{4(y-4)9(y+3)}{3(y+3)(4-y)}$$

* cross out common factors

$$\frac{4(y/4)9(y/3)}{3(y/3)(4-y)} = -4 \cdot 3 = \boxed{-12}$$