

DCA 4 (A.REI.A - rational) Review

Perform the indicated operation. List any restrictions for the variable(s) and simplify the answers when possible.

$$1) 4 \frac{(v-1)}{v^2-3v-18} + \frac{5(v+3)(v-b)}{4(v+3)(v-b)}$$

$$4(v+3)(v-b)$$

$$\frac{4v-4+5v^2-15v-90}{LCD}$$

$$\frac{5v^2-11v-94}{4(v+3)(v-b)}$$

Restrictions: $v \neq -3, b$

$$2) \frac{(n-2)(n+10)}{n^2+8n-20} \cdot \frac{n+2}{n-2}$$

$$\frac{(n-2)(n+10) \cdot (n+2)}{(n+2) \cdot (n-2)}$$

$$n+10$$

Restrictions: $n \neq -2, 2$

3) Solve.

$$\frac{2}{m^2-3m-4} + \frac{1}{3m-12} = \frac{2}{3m+3}$$

$$(m+1)(m-4) \quad 3(m-4) \quad 3(m+1)$$

$$2(3) + 1(m+1) = 2(m-4)$$

$$6 + m + 1 = 2m - 8$$

$$m + 7 = 2m - 8$$

$$15 = m$$

$$m = 15$$

4) A man rows downstream for 30 miles then turns around and returns to his original location, the total trip took 8 hours. If the current flows at 2 miles per hour, how fast would the man row in still water?

$$\frac{30}{x+2} + \frac{30}{x-2} = 8$$

$$30(x-2) + 30(x+2) = 8(x+2)(x-2)$$

$$30x - 60 + 30x + 60 = 8x^2 - 32$$

$$8x^2 - 60x - 32 = 0$$

$$2x^2 - 15x - 8 = 0$$

$$(x-8)(2x+1) = 0$$

$$x-8=0$$

$$x=8$$

$$2x+1=0$$

$$2x=-1$$

$$x=-\frac{1}{2}$$

$$8 \text{ mph}$$

Review

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Exemplary

5) State the vertical asymptote(s), horizontal asymptote(s), and x-intercept(s) of each of the following rational functions.

$$\text{a) } f(x) = \frac{x(x-3)}{x^2 - 3x} \\ x+3$$

vertical asymptote(s): $x = -3$

horizontal asymptote(s): none
BOTU

x-intercept(s): 0, 3

$$\text{b) } g(x) = \frac{1(x-5)(x+8)}{x^2 + 3x - 40} \\ x^2 + 10x + 24 \\ 1(x+4)(x+6)$$

vertical asymptote(s): $x = -4, x = -6$

horizontal asymptote(s): $y = 1$

x-intercept(s): 5, -8

EATS DC