

1. Let $f(x) = \frac{12}{x+3} - \frac{1}{x-2}$.
 - a. Evaluate $f(5)$.
 - b. Solve the equation $f(x) = 1$.
 - c. Solve the equation $f(x) = f(0)$.

2. Jacob is canoeing in a river with a 2 mph current. Suppose he can canoe 2 miles upstream in the same amount of time as it takes to canoe 5 miles downstream. Find the speed he can row in still water.

3. Jesse can row a boat at a speed of 2 mph in still water. If it takes him 4 hours longer to row 15 miles upstream than it does to row 15 miles downstream, find the speed of the current.

4. Igor can row a boat at a speed of 3 mph in still water. If it takes him twice as long to row 5 miles upstream as it does to row 5 miles downstream, find the speed of the current.

5. Jean can paint a room in 5 hours and Amelia can paint the same room in 9 hours. How long will it take to paint the room if they work together?

6. It takes Ricardo 12 hours longer to complete an inventory report than it takes Sanjay. If they work together, it takes them 8 hours. How many hours would it take Sanjay if he worked alone?

7. It takes Charles $4\frac{1}{2}$ hours to paint a room working alone. Charles starts painting at 1:00Pm and at 3:00Pm Diana starts to help him. They finish painting at 4:30Pm. How long would it have taken them to paint the room if they had worked together the entire time?

8. Jenifer takes the same amount of time to run three miles as it takes Carlos to ride his bike 10 miles. If Carlos travels 5 mph faster than Jenifer, how fast does Carlos ride?

9. Mary drove 600 miles on an interstate highway. Her speed was 50 mph except on a part of the highway under construction, where her speed was 20 mph. If her total driving time was 20 hours, how many miles of the highway were under construction?

10. Allan starts painting a room at 1 PM. At 3 PM Betty starts to help. They finish the job at 7 PM. The next day Betty starts putting on a second coat of paint at 1 PM. Allan joins her at 4 PM and they finish the job at 7 PM. The following day they both start putting on a third coat of paint at 1 PM. What time do they finish?

11. A plane can fly at a speed of 500 mph in still air. The plane takes 50 minutes longer to fly from New York to Seattle than it does to fly from Seattle to New York. If the distance between the two cities is 3000 miles, find the average speed of the plane during a round trip flight between Seattle and New York. Assume that the wind blows at a constant speed from west to east.