***Solution Section* 1.3 − Fractions and Rationalization**

***Exercise***

Perform each indicated operation & simplify 

***Solution***









***Exercise***

Perform the operation and simplify: 

***Solution***









***Exercise***

Perform the operation and simplify: 

***Solution***







***Exercise***

Perform the operation and simplify: 

***Solution***







***Exercise***

Simplify the fraction: 

***Solution***











***Exercise***

Simplify: 

***Solution***













***Exercise***

Simplify the expression: 

***Solution***













***Exercise***

Simplify the expression: 

***Solution***









***Exercise***

Simplify the expression: 

***Solution***









***Exercise***

Simplify the expression: 

***Solution***









***Exercise***

Simplify the expression: 

***Solution***











***Exercise***

Simplify the expression: 

***Solution***









***Solution Section* 1.4 − Equations and Application**

***Exercise***

Suppose that Greg, manager of a giant supermarket chain, has studied the supply and demand for watermelons. He has noticed that the demand increases as the price decreases. He has determined that the quantity (in thousands) demanded weekly q, and the price (in dollars) per watermelons, p, are related by the linear function.

 Demand function

1. Find the demand at a price of $5.25 per watermelon and at a price of $3.75 per watermelon.
2. Greg also noticed that the supply of watermelons decreased as the price decreased. Price p and supply q are related by the linear function

 Demand function

Find the supply at a price of $5.25 per watermelon and at a price of $3.00 per watermelon.

1. Use the algebra to find the equilibrium quantity for the watermelon in example 2

***Solution***

Demand at a price of $5.25 per watermelon = *p*









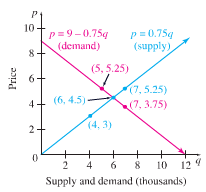
 At the price of $5.25, the demand is 5000 watermelons

Demand at a price of $3.75 per watermelon = *p*





 At the price of $3.75, the demand is 7000 watermelons

Supply at a price of $5.25 per watermelon

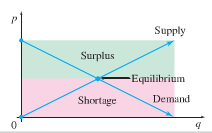


 7000 watermelons

Supply at a price of $3.00 per watermelon



 4000 watermelons



Equilibrium quantity → *Demand* function = *Supply* function







The equilibrium quantity is 6000 watermelons.

***Exercise***

In Recent years, the percentage of the U.S. population age 18 and older who smoke has decreased at a roughly constant rate, from 23.3% in 2000 to 20.9% in 2004.

1. Find the equation describing this linear relationship.
2. One of the objectives of Healthy People 2010 (a campaign of the U.S. Department of Health and Human Services) is to reduce the percentage of U.S. adults to smoke to 12% or less by the year 2010. If this decline in smoking continues at the same rate, will they meet this objective

***Solution***

|  |  |  |
| --- | --- | --- |
|  | ***x*** | ***y*** |
| **2000** | 0 | 23.3 |
| **2004** | 4 | 20.9 |

1. 











1. In 2010 





In 2010, the rate is estimated 17.3% will still smoke and the objective will not met.

***Exercise***

The number of African Americans earning doctorate degrees has risen at an approximately constant rate from 1987 to 2005. The linear equation , where x represents the number of years since 1987, can be used to estimate the annual number of African Americans earning doctorate degrees.

Determine this number in 2006.

***Solution***

In 2006 







***Solution Section* 1.5 – Limits and Asymptotes**

***Exercise***

Find the limit: 

***Solution***



***Exercise***

Find the limit: 

***Solution***

 = 





 = 4

***Exercise***

Find the limit: 

***Solution***

***Exercise***

Find the limit:

***Solution***

= 2(12) – 1 + 4

= 5

***Exercise***

Find the limit:

***Solution***



= 22 +2(2) + 4

= 12

***Exercise***

Find the limit: 

***Solution***





= 3 + 4

= 7

***Exercise***

Find the limit***:***

***Solution***















***Exercise***

Find the limit:

***Solution***







***Exercise***

Find the limit: 

***Solution***

 (***Doesn’t exist***)

***Exercise***

Find the limit:

***Solution***



***Exercise***

Find the limit: 

***Solution***



***Exercise***



***Solution***





***Exercise***



***Solution***



***Exercise***



***Solution***





***Exercise***

****

***Solution***

VA: *x* = 5

HA: *y* = 0

***Exercise***



***Solution***

***Exercise***



***Solution***

VA: *x* = -3, 

HA: *y* = 

***Exercise***



***Solution***

VA: *x* = ±2

***Exercise***



***Solution***

VA: *x* = -3,

*hole x = 3*

***Exercise***



***Solution***

VA: *x* = 0, 4

***Exercise***

****

***Solution***

VA: 

HA: 

***Solution Section* 1.6 – Continuity and Rates of Change**

***Exercise***

Determine whether  is continuous on the entire number line. Explain your reasoning.



***Solution***



The function is continuous on 

***Exercise***

Determine whether  is continuous on the entire number line. Explain your reasoning.



***Solution***



The function is continuous on 

***Exercise***

Find the slope of the graph of *f(x) = 2x + 5*

***Solution***











= 2

***Exercise***

Find the slope of the graph of 

***Solution***













