Math 220 - Calculus f. Business and Management - Worksheet 36 - 37

Worksheet 36 - 37 - Area and Average Value

***Exercise 1**:*

Find the total distance travelled for the following situations:

$1a)$ *Velocity* $=$ 50 *kph constantly for* 4 *hours.*

$1b)$ *Velocity* $=$ 50 *kph for* 2 *hours,* 70 *kph for* 2 *hours.*

$1c)$ *Velocity* $=$ 50 *kph for* 1 *hour,* 60 *kph for* 2 *hours,* 40 *kph for* 1 *hour.*

***Exercise 2**: Find the area between each of these curves and the x-axis:*

$2a)$ $v(t) = t^2$ *from* $t = 0$ *to* $t = 4$

$2b)$ $f(x) = x^2 + 3x + 7$ *from* $x = 1$ *to* $x = 5$

***Exercise 3**: Find both the signed area and the area between each of these curves and the* x*-axis:*

$3a)$ $f(x) = x^3$ *from* $x = -1$ *to* $x = 1$

$3b)$ $h(x) = x^2 - 6x + 5$ *from* $x = 1$ *to* $x = 5$ *and from* $x = 0$ *to* $x = 6$

***Exercise 4**:*

Find the area between these non-intersecting curves (how can you show they don't intersect?):

$4a)$ $f(x) = x^2 + 10$ *and* $g(x) = 2x$ *from* $x = 0$ *to* $x = 5$

$4b)$ $f(x) = 2x - 3$ *and* $g(x) = 5x + 7$ *from* $x = 1$ *to* $x = 4$

***Exercise 5**:*

Find the area between these curves:

$5a)$ $f(x) = 5x - 2$ *and* $g(x) = 4x + 1$ *from* $x = 2$ *to* $x = 6$

$5b)$ $f(x) = x^2 - 4x + 7$ *and* $g(x) = -x^2 + 4x + 1$ *(Note: you will need to find the integration bounds.)*

***Exercise 6**:*

Find the average velocity for the situations in problem 1.

***Exercise 7**:*

The price for a product is increasing over time according to this formula: $p(t) = 2e^{.01t}$ *where* t *is measured in weeks. What is the average price from week* 2 *to week* 5*?*