Assignment 3 – All 3 parts – Math 243

Due: Wednesday, Feb. 1, 2017, at the beginning of class

Textbook exercises:[1]

Section 11.4: $2, 4, 6, 8, 10, 16, 24$ and 26

Section 11.5: $34, 36, 38$

Other exercises:

(1) Find a parametric vector equation $\mathbf{r} = \mathbf{r}_0 + t\mathbf{v}$ for the following lines. Also write them as parametric component equations.

   (a) The line through the points $(0, 1, 3)$ and $(1, 4, -2)$.

   (b) The line through $(-1, 7, 0)$ parallel to the vector $(4, -4, 4)$.

   (c) The line through the point $(-3, -2, 1)$ and the midpoint of the line segment connecting $(4, 6, 8)$ to $(8, 6, 2)$.

   (d) The line given by the pair of non-parametric equations

$$\frac{x-2}{3} = \frac{y-1}{5} = \frac{z+1}{2}.$$

(2) Find a pair of non-parametric equations for the line through the point $(7, -2, 1)$ parallel to the vector $(4, 5, 3)$.

(3) Find a parametric vector equation for the line *segments* between the following points.

   (a) $P = (1, 0, 1)$ and $Q = (5, 6, 7)$.

   (b) $P = (0, 0, 0)$ and $Q = (3, 5, -11)$.

[1] From Hass, Weir, and Thomas' *University calculus: alternate edition*