

HOMEWORK #1 (Chapter 7 Vectors · 9.1 Vector Functions)

**Due on March 1**

1) Find a vector  $\vec{b}$  that is parallel to the given vector and has the indicated magnitude  
 $\vec{a} = 3\vec{i} + 7\vec{j}$ ,  $|\vec{b}| = 2$  (Problem 31, page 302).

2)  $\vec{a} = \langle 1, -3, 2 \rangle$ ,  $\vec{b} = \langle -1, 1, 1 \rangle$  and  $\vec{c} = \langle 2, 6, 9 \rangle$ . Find the indicated vector or scalar

$$\frac{|\vec{a}|}{|\vec{a}|} + 5 \frac{|\vec{b}|}{|\vec{b}|} \quad (\text{Problem 47, page 309}).$$

3) Find parametric and symmetric equations for the line through the given point parallel to the given vector  $(4, 6, -7)$ ,  $\vec{a} = \langle 3, 1/2, -3/2 \rangle$  (Problem 19, page 329).

4) Find the parametric equation of the tangent line to the given curve at the indicated value of  $t$ .  $x = t$ ,  $y = t^2/2$ ,  $z = t^3/3$ ;  $t = 2$  (Problem 25, page 454).

5) Find the length of the curve traced by the given vector function on the indicated interval  
 $\vec{r}(t) = a \cos(t)\vec{i} + a \sin(t)\vec{j} + ct\vec{k}$ ;  $0 \leq t \leq 2\pi$  (Problem 41, page 454).