

## Elementary Engineering Mathematics

### Exercises #4 Answers

1.  $\underline{F} \approx -177\hat{i} + 177\hat{j}$  (lb)
2.  $\underline{F} \approx 57.4\hat{i} + 81.9\hat{j}$  (lb)
3.  $|\underline{F}| \approx 158$  (lb),  $\theta \approx 252$  (deg)  $\approx 4.39$  (rad)
4.  $|\underline{F}| \approx 128$  (lb),  $\theta \approx -51.3$  (deg)  $\approx -0.896$  (rad)
5.
  - a)  $\underline{F} \approx -14\hat{i} + 138\hat{j}$  (lb)
  - b)  $|\underline{F}| \approx 138$  (lb)
  - c)  $\theta \approx 95.8$  (deg)  $\approx 1.67$  (rad)
  - d)  $\underline{n} \approx -0.101\hat{i} + 0.995\hat{j}$
6.
  - a)  $\theta \approx 64.9$  (deg)  $\approx 1.13$  (rad)
  - b)  $\underline{F}_{\parallel} \approx 57.6\hat{i} + 43.2\hat{j}$  (lb)
  - c)  $\underline{F}_{\perp} \approx 92.4\hat{i} - 123\hat{j}$  (lb)
7.
  - a)  $\theta \approx 46$  (deg)  $\approx 0.802$  (rad)
  - b)  $\underline{F}_{\parallel} \approx 124\hat{i} + 71.7\hat{j}$  (lb)
  - c)  $\underline{F}_{\perp} \approx -74.1\hat{i} + 128\hat{j}$  (lb)
8.  $\underline{M}_B \approx 530\hat{k}$  (ft-lb),  $d \approx 3.12$  (ft)
9.  $\underline{M}_B \approx -1850\hat{k}$  (ft-lb),  $d \approx 8.97$  (ft)
10.
  - a)  $\underline{W} \approx -173\hat{i} - 100\hat{j}$  (lb),  $\underline{P} \approx 50\hat{i} - 86.6\hat{j}$  (lb)
  - b)  $\underline{f} \approx 123\hat{i}$  (lb),  $\underline{N} \approx 187\hat{j}$  (lb)