Math 42 Midterm 4 Review

[1] original distance 167 feet, final distance 72 feet

[2] 47°

[3] 17°

[4] $\vec{d} = \vec{a} + \vec{b}$, $\vec{e} = \vec{c} - \vec{b}$, $\vec{f} = -\vec{a} - \vec{c}$

[5] [a] $< \frac{2\sqrt{5}}{5}, -\frac{\sqrt{5}}{5} >$ or $< -\frac{2\sqrt{5}}{5}, \frac{\sqrt{5}}{5} >$

[b] 4.25

[c] $-6\vec{i} + (4 + 8\sqrt{3})\vec{j}$

[d] $< -2\sqrt{5}, -4\sqrt{5} >$

[6] [a] 0.32

[b] $\vec{f} = (-\frac{3}{2}\vec{i} - \frac{9}{2}\vec{j}) + (\frac{3}{2}\vec{i} - \frac{1}{2}\vec{j})$

[c] $(-6, 1)$

[d] $-\frac{5}{2}$

[e] $-\frac{7}{3}$

[7] [a] $< 7, -2 >$

[b] $2\vec{i} + 6\vec{j}$

[c] $2\sqrt{10}$

[d] $< -\frac{\sqrt{10}}{10}, -\frac{3\sqrt{10}}{10} >$

[e] $< \frac{12\sqrt{53}}{53}, \frac{42\sqrt{53}}{53} >$ or $< -\frac{12\sqrt{53}}{53}, -\frac{42\sqrt{53}}{53} >$

[f] -9.09

[g] 1.61 radians or 92.49°

[h] -16

[8] $\frac{245\sqrt{3}}{2} = 212.2$ newtons in direction angle 60° , and $\frac{245}{2} = 122.5$ newtons in direction angle 150°

[9] 37.7 miles on a bearing of 217°

[10] $\frac{320\sqrt{2}}{3} = 150.8$ Joules