

#### 12.4: Answers

1. 23
2. -47
3.  $55/2$
4. 68.2 degrees
5. 134.0 degrees
6. a) orthogonal  
b) neither  
c) parallel
7.  $x = 0, 1$
8. a)  $-\frac{1}{6}(2\mathbf{i} + \mathbf{j} + \mathbf{k})$   
b)  $\frac{23}{49}\langle 2, -3, -6 \rangle$
9. 17 foot pounds
10. 60 joules
11. 8, 1
12. a) -2  
b) 2
13. a) 26  
b) -30