Pg 511 #5-27 odd + #29-35 (all)

Will Dunning

5. $\langle 3-(-2), 4-2\rangle = \langle 5, 2\rangle$

$\|PQ\| = \sqrt{5^2+2^2} = \sqrt{29}$

7. $\langle -2-3, 5-4\rangle \to \langle -5, 1\rangle$

$\|\vec{QR}\| = \sqrt{(-5)^2+(1)^2} = \sqrt{26}$

9. $\langle 2-3, -8-4\rangle \to \langle -1, -12\rangle \cdot 2 =$

$\langle -2, -24\rangle$

$\sqrt{(-2)^2+(-24)^2} = 2\sqrt{145}$

11. $3\cdot\langle -5, 1\rangle + \langle 4, -10\rangle$

$\langle -15, 3\rangle + \langle 4, -10\rangle$

$\langle -11, -7\rangle \quad \sqrt{(-11)^2+(-7)^2} = \sqrt{170}$

13. $\langle -1, 3\rangle + \langle 2, 4\rangle$

$\langle 1, 7\rangle$

15. $\langle -1, 3\rangle - \langle 2, -5\rangle$

$\langle -3, 8\rangle$

17. $\langle -2, 6\rangle + \langle 6, -15\rangle$

$\langle 4, -9\rangle$

19. $-\langle -2, 6\rangle - \langle 6, 12\rangle$

$\langle 2, -6\rangle + \langle -6, -12\rangle$

$\langle -4, -18\rangle$

21. $U = \langle -2, 4\rangle$

$$\frac{U}{|U|} = \left\langle \frac{-2}{\sqrt{(2)^2+4^2}}, \frac{4}{\sqrt{(-2)^2+4^2}} \right\rangle$$

$= -0.45i + 0.89j$

23. $-1-2j$

$\langle -1, -2\rangle$

$$\frac{-1}{\sqrt{(-1)^2+(-2)^2}} \quad \frac{-2}{\sqrt{(-1)^2+(-2)^2}} = -0.45i - 0.89j$$

25. $v = \langle 2, 1 \rangle$

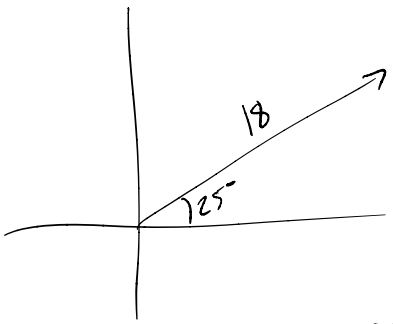
$\frac{2}{\sqrt{2^2+1^2}}, \frac{1}{\sqrt{2^2+1^2}}$

$\frac{2}{\sqrt{5}}, \frac{1}{\sqrt{5}}$ or $\frac{2}{\sqrt{5}}i + \frac{1}{\sqrt{5}}j$

27. $\langle -4, -5 \rangle$

$\frac{-4}{\sqrt{(-4)^2+(-5)^2}}, \frac{-5}{\sqrt{(-4)^2+(-5)^2}}$

29.



$v = \langle 18\cos 25, 18\sin 25 \rangle$

$v = \langle 16.31, 7.61 \rangle$

30

$v = \langle 14\cos 55, 14\sin 55 \rangle$

$v = \langle 8.03, 11.47 \rangle$

31.

$v = \langle 47\cos 108, 47\sin 108 \rangle$

$v = \langle -14.52, 44.7 \rangle$

32. $v = \langle 33\cos 136, 33\sin 136 \rangle$

$v = \langle -23.74, 22.92 \rangle$

33. $\langle 3, 4 \rangle$

$\|v\| \langle 3, 4 \rangle$

$\sqrt{3^2+4^2} = 5$

$3 = 5\cos\theta$

$\cos\theta = \frac{3}{5}$

$\theta = 53.1°$

34. $\langle -1, 2 \rangle$

$\sqrt{(-1)^2+2^2} \to \sqrt{5}$

$-1 = \sqrt{5}\cos\theta$

$\frac{-1}{\sqrt{5}} = \cos\theta$ $\theta = 116.5°$

35. $3i - 4j$

$\langle 3, -4 \rangle$

$\sqrt{3^2+(-4)^2} = 5$

$-4 = 5\sin\theta$

$\sin\theta = -\frac{4}{5}$

$\theta = 306.9°$