10.1 Even Answers

2) (a) $\sqrt{3}$ (b) 0

4) (a) $-t$ (b) t^2

6) (a) $\dfrac{2t-1}{2t+1}$ (b) $\dfrac{4}{(2t+1)^3}$

8) (a) nowhere since $\csc t \neq 0$
(b) (1, 0) and (–1, 0)

10) (a) (–2, 4) and (–2, –2)
(b) (1, 1) and (–5, 1)

12) $\dfrac{21}{2}$

14) π^2

16) ≈ 4.497

18) $\dfrac{4\pi(5\sqrt{5}-1)}{9} \approx 14.214$

20) π

10.2 Even Answers (2-26, 30, 32)

2) (a) $\langle 4,-10\rangle$ (b) $2\sqrt{29}$

4) (a) $\langle 5,-7\rangle$ (b) $\sqrt{74}$

6) (a) $-2\mathbf{u} = \langle -6,4\rangle \quad 5\mathbf{v} = \langle -10,25\rangle$
$-2\mathbf{u} + 5\mathbf{v} = \langle -16,29\rangle$
(b) $\sqrt{1097}$

8) (a) $-\dfrac{5}{13}\mathbf{u} = \left\langle -\dfrac{15}{13}, \dfrac{10}{13}\right\rangle \quad \dfrac{12}{13}\mathbf{v} = \left\langle -\dfrac{24}{13}, \dfrac{60}{13}\right\rangle$
$-\dfrac{5}{13}\mathbf{u} + \dfrac{12}{13}\mathbf{v} = \left\langle -3, \dfrac{70}{13}\right\rangle$
(b) $\dfrac{\sqrt{6421}}{13}$

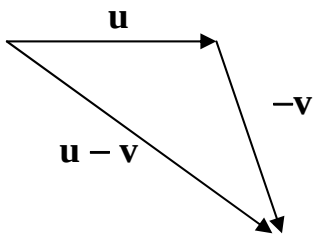
10) $\langle -1,1\rangle$

12) $\overrightarrow{\mathbf{AB}} = \langle 1,1\rangle \quad \overrightarrow{\mathbf{CD}} = \langle -1,-1\rangle \quad \overrightarrow{\mathbf{AB}} + \overrightarrow{\mathbf{CD}} = \langle 0,0\rangle$

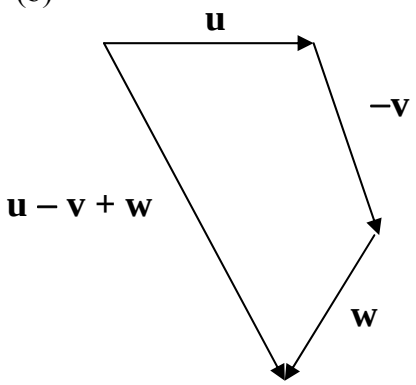
14) $\left\langle \cos\left(\dfrac{-3\pi}{4}\right), \sin\left(\dfrac{-3\pi}{4}\right)\right\rangle = \left\langle -\dfrac{1}{\sqrt{2}}, -\dfrac{1}{\sqrt{2}}\right\rangle$

16) $\langle \cos 135°, \sin 135°\rangle = \left\langle -\dfrac{1}{\sqrt{2}}, -\dfrac{1}{\sqrt{2}}\right\rangle$

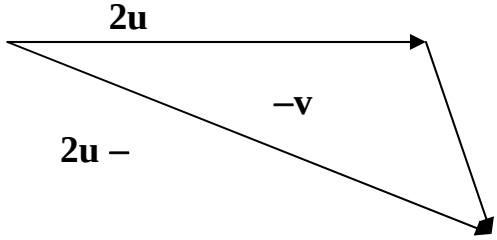
18) (a)



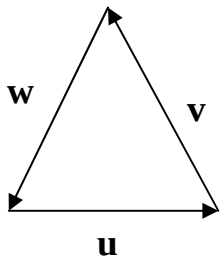
(b)



(c)



(d)



20) $\left\langle \frac{4}{5}, -\frac{3}{5} \right\rangle$

22) $\left\langle -\frac{5}{\sqrt{29}}, -\frac{2}{\sqrt{29}} \right\rangle$

24) Tangent: $\pm\left\langle \frac{1}{\sqrt{5}}, \frac{2}{\sqrt{5}} \right\rangle$

Normal: $\pm\left\langle \frac{2}{\sqrt{5}}, \frac{1}{\sqrt{5}} \right\rangle$

26) Tangent: $\pm\left\langle \frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}} \right\rangle$

Normal: $\pm\left\langle \frac{1}{\sqrt{2}}, -\frac{1}{\sqrt{2}} \right\rangle$

28) $\overrightarrow{\mathbf{AC}} = \langle 2, 4 \rangle \quad \overrightarrow{\mathbf{BD}} = \langle 4, -2 \rangle$

Find $\overrightarrow{\mathbf{AC}} \cdot \overrightarrow{\mathbf{BD}}$ to find the angle

30) *(Proof)* 32) *(Proof)*