

Sample problems for Test 1. Answers.

1. $s = \sqrt{496}$ mph
4. (a.) $\vec{u} = \left\langle -\frac{3}{\sqrt{13}}, \frac{2}{\sqrt{13}} \right\rangle$
(b.) $\pi/2$
(c.) $\text{comp}_{\vec{b}}\vec{a} = 0$, $\text{proj}_{\vec{b}}\vec{a} = \vec{0}$
5. $-4x + y + 1 = 0$
6. $\frac{13}{\sqrt{5}}$
7. $W = 40 \cos(40^\circ)$
8. $y = 2x^2 - 1$
9. $\langle x, y \rangle = \langle 1, 2 \rangle + t \langle -4, 2 \rangle$; $x = 1 - 4t$, $y = 2 + 2t$
10. (a.) $(10, 6)$
(b.) $t = 5$
13. (a.) $\frac{3}{2}$
(b.) ∞
(c.) $-\frac{1}{56}$
(d.) $\left\langle 0, \frac{1}{4} \right\rangle$
(e.) 0
(f.) $\frac{7}{2}$
(g.) $\frac{3}{2}$
(h.) $5/2$
15. $y = \frac{1}{3}$ is the horizontal asymptote, $x = 1$ and $x = -1$ are vertical asymptotes.
17. $c = 2$, $d = 0$.
18. (a.) f has the removable discontinuity at $x = -2$
(b.) g has the infinity discontinuities at $x = 2$ and $x = -2$
(c.) h has the jump discontinuity at $x = 2$.
21. $y = \frac{7}{4}(x - 1) + 2$
22. $x = 3 + 4t$, $y = 2t$