

Chapter Test

T1. $d^2 = c^2 + e^2 - 2ce \cos D$

T2. $\frac{c}{\sin C} = \frac{d}{\sin D} = \frac{e}{\sin E}$ or
 $\frac{\sin C}{c} = \frac{\sin D}{d} = \frac{\sin E}{e}$

T3. $A = \frac{1}{2} de \sin C$

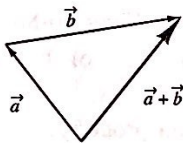
T4. ASA is shown, but the law of cosines works only for SAS and SSA.

T5. SAS is shown, but the law of sines works only for ASA, SAA, and SSA.

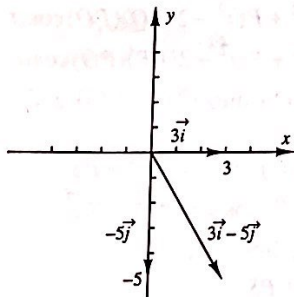
T6. $10 + 7 < 19$. Also, if we try to use the law of cosines to find any of the angles, we get
 $\frac{7^2 + 10^2 - 19^2}{2 \cdot 7 \cdot 10} \approx -1.5$, $\frac{10^2 + 19^2 - 7^2}{2 \cdot 10 \cdot 19} \approx 1.1$, or
 $\frac{19^2 + 7^2 - 10^2}{2 \cdot 19 \cdot 7} \approx 1.2$, none of which is the cosine of any angle.

T7. The range of \cos^{-1} is $0^\circ \leq \theta \leq 180^\circ$, which includes every possible angle measure for a triangle. But the range of \sin^{-1} is $-90^\circ \leq \theta \leq 90^\circ$, so the function \sin^{-1} cannot find obtuse angles.

T8.



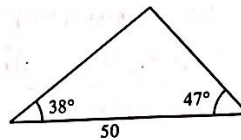
T9.



T10. Student drawing. The third side should be about 3.2 cm.

T11. $\sqrt{7^2 + 5^2 - 2 \cdot 7 \cdot 5 \cos 24^\circ} \approx 3.2 \text{ cm}$

T12.



$180^\circ - (38^\circ + 47^\circ) = 95^\circ$

T13. $\frac{50 \sin 38^\circ}{\sin 95^\circ} \approx 30.9 \text{ ft}$

T14, T15, T16. Answers will vary.

T17. $3^2 = x^2 + 5^2 - 2 \cdot x \cdot 5 \cos 26^\circ$

$x^2 + (-10 \cos 26^\circ)x + 16 = 0$

$x = \frac{10 \cos 26^\circ \pm \sqrt{(-10 \cos 26^\circ)^2 - 4 \cdot 1 \cdot 16}}{2 \cdot 1}$

$= 6.54232772... \text{ cm or } 2.445612733... \text{ cm}$

T18. $\sqrt{5^2 - 3^2} = 4 \text{ cm}$

T19. $(6.54232772...)(2.445612733...) = 16 = 4^2$

T20. $|r| = \sqrt{3^2 + (-5)^2} = \sqrt{34} \approx 5.8$

$\theta = \tan^{-1} \frac{-5}{3} \approx 301.0^\circ$,

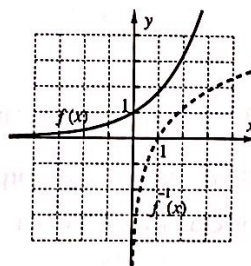
since $(3, -5)$ is in the fourth quadrant.

T21. Student essay

Problem Set 6-9

Cumulative Review, Chapters 1-6

- $f(x) = ax^2 + bx + c$ where $a \neq 0$
- Horizontal dilation by $\frac{1}{3}$, vertical dilation by 5
- Horizontal translation by 3, vertical translation by -2; $h(x) = f(x-3) - 2$
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5. Odd

6. $g(x) = 3 \dots + 5$