Arc Trig Worksheet

Evaluate

1. Arccos ½ $\pi/3$
2. Arcsin 1 $\pi/2$
3. Arcsin 0 0
4. Arccos 0 $\pi/2$
5. Arctan $(-\sqrt{3})$ $-\pi/3$
6. Arcsin (-1/2) $-\pi/6$
7. Arcsec 2 $\pi/3$
8. Arccot $(\sqrt{3})$ $\pi/6$
9. Arctan $(\frac{\sqrt{3}}{3})$ $\pi/6$
10. Arctan 1 $\pi/4$
11. Arcsin $(-\frac{\sqrt{2}}{2})$ $-\pi/4$
12. Arccos $(-\frac{\sqrt{3}}{2})$ $5\pi/6$

Find the exact value of the given expression without using a calculator. (Hint: Make a sketch of a right triangle)

13. sin(arctan ¾) $= 3/5$
14. sec (arcsin 4/3) $\rightarrow \sec(\sin^{-1}(3/4)) = 4/\sqrt{7} = \frac{4\sqrt{7}}{7}$
15. cos(arctan 2) $= 1/\sqrt{5} = \sqrt{5}/5$
16. sin(arcos $\frac{\sqrt{5}}{5}$) $= \frac{2\sqrt{5}}{5}$
17. cos(arcsin 5/13) $= 12/13$
18. csc[arctan (-5/12)] $= -13/5$
19. sec[arctan(-3/5)] $= \sqrt{34}/5$
20. tan[arcsin(-5/6)] $= -5/\sqrt{11} = -5\sqrt{11}/11$

Write an algebraic expression that is equivalent to the given expression. (Hint: Sketch a right triangle.)

21. cot(arctan x) $= 1/x$
22. sin(arctan x) $\sqrt{1-x^2}$
23. cos(arcsin 2x) $= 1/\sqrt{4x^2+1}$
24. sec(arctan 3x) $\sqrt{9x^2+1}$
25. sin (arccos x) $= \sqrt{1-x^2}$
26. cot (arctan $\frac{1}{x}$) $= x$
27. tan(arcos $\frac{x}{3}$) $= \sqrt{9-x^2}/x$
28. sec[arcsin(x-1)] $= \sqrt{(x-1)^2+1} = \sqrt{x^2-2x+2}$
29. csc (arctan $\frac{x}{\sqrt{2}}$) $= \sqrt{x^2+2}/x$

13) 5, 3, 4

14) 4, 3, $\sqrt{7}$

15) $\sqrt{5}$, 2, 1

16) 5, $\sqrt{20} = 2\sqrt{5}$, $\sqrt{5}$

17) 13, 5, 12

18) 12, 5, 13

19) 5, 3, $\sqrt{34}$

20) $\sqrt{11}$, 5, 6

21) $\sqrt{x^2+1}$, x, 1

22) 1, $\sqrt{1-x^2}$, x

23) $\sqrt{4x^2+1}$, $2x$

24) $\sqrt{9x^2+1}$, $3x$

25) 1, $\sqrt{1-x^2}$, x

26) $\sqrt{x^2+1}$, 1, x

27) 3, $\sqrt{9-x^2}$, x

28) $\sqrt{(x-1)^2+1}$, $x-1$, 1

29) $\sqrt{x^2+2}$, x, $\sqrt{2}$