1. $\{x \mid x \geq 3\}$

$x \geq 3$

$[3, \infty)$

2. $[0, \infty)$

3. $x = 3$

4. $-\frac{13}{7}$

5. F

6. 8

7. F

8. 72

9. $x > -5$

$(-5, \infty)$

10. $x = 1, -1$

11. $(1, 1)$

Domain: x-values defined

Rational

$\frac{1}{x}$ den $\neq 0$

even $\sqrt{\text{radicand}}$ $\sqrt[3]{-8}$

radicand ≥ 0

undefined restrictions

$\sqrt{-9}$

$\log 2x$

argument

argument > 0

5. -3^2 $(-3)^2$ $|-3^2|$

$|-9|$

$-3 \cdot 3$ $-3 \cdot -3$

-9 9 9

6. $(-4)^{\frac{3}{2}} = (4^3)^{\frac{1}{2}} = (4^{\frac{1}{2}})^3$

$\sqrt{4^3}$

$(\sqrt{4})^3$

$2^{-3} = \frac{1}{2^3}$

$\left(\frac{1}{2}\right)^3$

$\frac{1}{2^3}$

$25^{-\frac{1}{2}}$

$\frac{1}{25^{\frac{1}{2}}}$

$\frac{1}{5}$

$\sqrt{x+5}$ $x \geq -5$, $(-5, \infty)$

$\frac{1}{\sqrt{x+5}}$

$(-5)^2 - 7(-5) + 12$

12. $(-\infty, \infty)$

$\mathbb{R}$

$x^2 + 25 = 0$

$\sqrt{x^2} = \sqrt{-25}$

13. $x \neq 5, -5$

$(-\infty, -5) \cup (-5, 5) \cup (5,$

14. $-\frac{1}{2}$

15. T

16. $x = \pi$

17. $[-3, 3]$

19. $-3 \leq x \leq 3$

18. 0

20. $x = -7$

21. $m = -2$

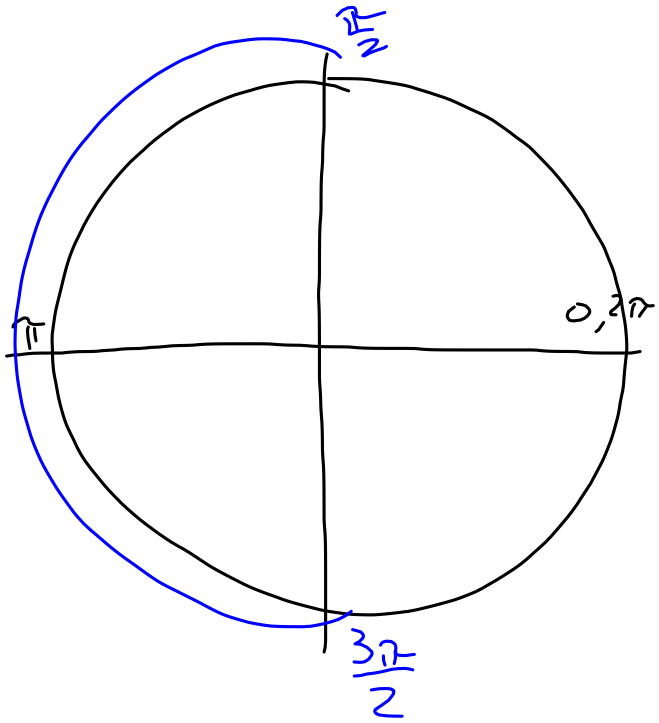
16.

$\sin x = 0$

(D, R)

(x, y)

(cos x, sin x)



17.

$y = \sqrt{9 - x^2}$

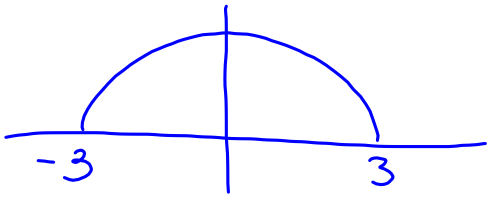
$x^2 + y^2 = 9$

$-x^2 + 9$

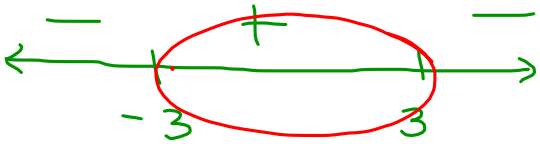
$9 - x^2 \geq 0$

$9 - x^2 = 0$

$(3 - x)(3 + x) = 0$



$[-3, 3]$



$[-3, 3]$

20.

$y = \dfrac{x + 7}{x^2 - 6x + 8}$

$0 = \dfrac{x + 7}{x^2 - 6x + 8} = 0$

13. $y = \dfrac{x^2 - 2}{x^2 - 25}$

$x^2 - 25 = 0$

$\sqrt{x^2} = \sqrt{25}$

$x = \pm 5$

22. $\frac{1}{4}$

23. -1

24. -2

25. A

26. T

27. C

28. $\frac{2\sqrt{3}}{3}$

29. 1

30. $f^{-1}(x) = \sqrt{x-5}$

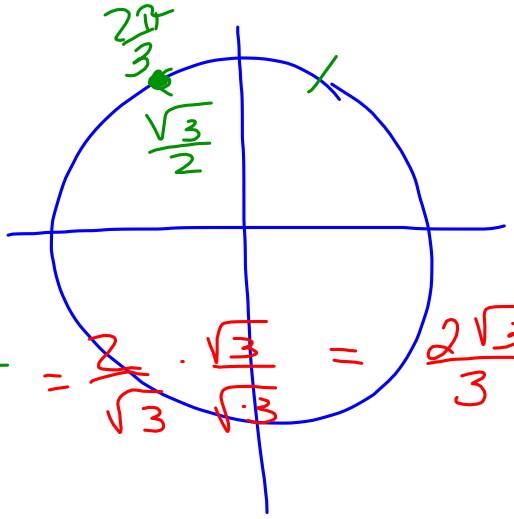
31. $(0, 6)$

32. F

$\sqrt[3]{-8} = -2 \cdot -2 \cdot -2$

28.

$\sin \frac{2\pi}{3} = \frac{\sqrt{3}}{2}$

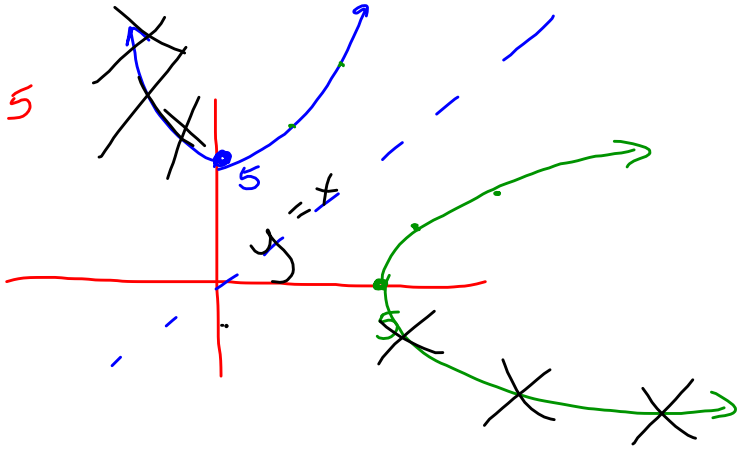


$\csc \frac{2\pi}{3} = \frac{1}{\frac{\sqrt{3}}{2}} = \frac{2}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{2\sqrt{3}}{3}$

30.

$f(x) = x^2 + 5$

$x \geq 0$



$f^{-1}(x) = \sqrt{x-5}$

$x = y^2 + 5$

$\sqrt{y^2} = \sqrt{x-5}$

$y = \pm\sqrt{x-5}$

$f(x) = e^x + 5$

$y = e^0 + 5$

$y = 6$

$(0, 6)$

$g(x) = x + 1$

$f(g(x)) = e^{x+1} + 5$

$g(f(x)) = (e^x + 5) + 1$

$e^x + 6$