

Cumulative Review Test 4, page 635

- $t_n = -13 + 9n$, 212, 1630
 - $t_n = 3(1.1)^n - 1$, 29.55, 171.82
- 14
 - 37
- \$986 255.97
- \$18 768.34
 - \$7472.58
 - \$10 485.51
 - \$9515.60
- \$2703.65
 - \$176.35
- 64 months
- \$1391.05
 - \$181 258.24, \$178 565.66, \$175 656.07, \$172 512.00, \$169 114.55
 - principal: \$14 635.45, interest: \$68 827.55
 - total interest: \$233 569.25, total cost: \$478 565.00
- $\frac{142}{9}$
 - $\frac{9x^2}{16y^2}$
 - $\frac{2^{2n}x^{3m}}{2^mx^n}$
- $x = 1 \pm \frac{\sqrt{6}}{2}i$
 - $x = 12, x = -18$
 - $x = -1$
 - $x = -4, x = -5$
- $D = \{x \mid x \leq 1.5, x \in \mathbf{R}\}$, $R = \{y \mid y \in \mathbf{R}\}$, not a function, fails the vertical line test
 $D = \{x \mid x \in \mathbf{R}\}$, $R = \{y \mid y > 0, y \in \mathbf{R}\}$, function, passes the vertical line test
 $D = \{x \mid x \geq 5, x \in \mathbf{R}\}$, $R = \{y \mid y \geq 0, y \in \mathbf{R}\}$, function, every x value corresponds to a unique y value
 $D = \{x \mid x \in \mathbf{R}\}$, $R = \{y \mid y \geq 4, y \in \mathbf{R}\}$, function, every x value corresponds to a unique y value
- g^{-1} is $y = \pm \sqrt{\frac{2-x}{3}} + 1 + 1$
 - $D(g(x)) = \{x \mid x \geq 1, x \in \mathbf{R}\}$ or $D(g(x)) = \{x \mid x \leq 1, x \in \mathbf{R}\}$
 - no, graph of g in that region fails the horizontal line test
- $x \leq 2$
 - $x < -\frac{1}{2}$
- horizontal shift $\frac{9}{16}$ units right, horizontal stretch by factor $\frac{2}{3}$, vertical translation $\frac{101}{128}$ units up
- $k < \frac{27}{8}, k = \frac{27}{8}, k > \frac{27}{8}$
 - $|k| > 12, |k| \pm 12, |k| < 12$
 - $k < \frac{1}{4}, k = \frac{1}{4}, k > \frac{1}{4}$
- zero: $x = 0$, asymptote: $x = -1$, $D = \{x \mid x \neq -1, x \in \mathbf{R}\}$, $R = \{y \mid y \neq 1, y \in \mathbf{R}\}$ no zeros, asymptotes: $x = -2$ and $x = 3$, $D = \{x \mid x \neq -2, x \neq 3, x \in \mathbf{R}\}$, $R = \{y \mid y \neq 0, y \in \mathbf{R}\}$
- zeros: $x \pm 2$, asymptote: $x = 0$, $D = \{x \mid x \neq 0, x \in \mathbf{R}\}$
 $R = \{y \mid y \in \mathbf{R}\}$
- $-46x^3 - 96x^2 - 50x - 8$
 - $6x^3 + 22x^2y - 26xy^2 + 6y^3$
- $\frac{5x(x-1)}{(x-5)(x+1)}, x \neq 5, -1$
 - $-\frac{4x}{5y}, x \neq 0, y \neq 0$
 - $\frac{(2m+5)(m-3)^2}{m^2-m+9}, m \neq -2, \frac{1 \pm \sqrt{35}i}{2}$
 - $\frac{y(x+y)}{(x-4)(x-y)}, x \neq 0, 4, y; y \neq 0$
 - $\frac{-3x-1}{(x+3)(x-5)(x+2)}, x \neq -3, 5, -2$
- $\theta = 42.36^\circ$
- $\frac{7\pi}{36}$ rad
 - $\frac{16\pi}{9}$ rad
 - $-\pi$ rad
 - $\frac{5\pi}{4}$ rad
- 157.5°
 - -15°
 - 480°
 - 56.25°
- $y = 2 \cos\left(\theta - \frac{\pi}{4}\right) - 2$ or $y = 2 \sin\left(\theta + \frac{\pi}{4}\right) - 2$
 - $y = -1.75 \cos \theta + 3.25$
- $d(t) = 3.25 \cos\left(\frac{\pi}{12}\right)(t - 0.1) + 14.75$
 - 5:48 a.m. and 6:12 p.m.; 10 a.m. and 2 p.m.
- $x = 0, \frac{\pi}{3}, \frac{2\pi}{3}$
 - $36.9^\circ, 323.1^\circ$
 - $x = 0, \frac{\pi}{2}, \frac{2\pi}{3}, \pi, \frac{3\pi}{2}, \frac{4\pi}{3}, 2\pi$
 - $x = 340.5^\circ, 199.5^\circ$
- 44.34 km
- $\angle N = 67^\circ, \angle M = 75^\circ, m = 47$ cm
- 289.03 m
- 5, 3, 22, 94, 464, 2044
- $8 + 6i$
 - 3
 - $22 - 7i$
 - $8 - 9i$
 - $-\frac{8}{5} + \frac{10}{11}i$
 - $2i$
 - $\frac{6}{169} + \frac{87}{169}i$
 - $\frac{145}{22} - \frac{9}{122}i$
- vertices: $(-4, 0)$ $(4, 0)$; foci: $(-2.65, 0)$ $(2.65, 0)$
 - vertices: $(-3, 0)$ $(3, 0)$; foci: $(-3.16, 0)$ $(3.16, 0)$
 - vertex: $(8, 4)$; focus: $(7.5, 4)$
 - vertices: $(0, -4)$ $(0, 4)$; foci: $(0, -4.5)$ $(0, 4.5)$
- $\frac{(x-2)^2}{16} + \frac{(y-3)^2}{81} = 1$
 - $\frac{9}{25}x^2 - y^2 = 9$
- ellipse
 - parabola
 - hyperbola
 - circle
- $xy = 8$
 - $y = -x + 6$
- $(0, -4)$ and $\left(\frac{6}{5}, -\frac{8}{5}\right)$