

Precalculus TEST Practice

[1] State the domain of each function.

[a] $f(x) = \frac{2+x}{2-x}$ [b] $f(x) = \frac{x-5}{x^2-4}$ [c] $f(x) = \frac{3x+1}{x^2-x-6}$ [d] $f(x) = \frac{x+1}{x^3-3x^2-6x+8}$

[e] $f(x) = \frac{x^2-4}{x^3+x^2-8x-12}$ [f] $f(x) = \frac{x^3-6x^2-7x+60}{x^3+12x^2+47x+60}$

[2] For each function, state the x -intercept(s).

[a] $f(x) = \frac{2+x}{2-x}$ [b] $f(x) = \frac{x-2}{x^2-4}$ [c] $f(x) = \frac{x^2-9}{x^2-x-6}$ [d] $f(x) = \frac{x^2-4}{x^3-3x^2-6x+8}$

[3] For each function, state the vertical asymptote(s).

[a] $f(x) = \frac{2+x}{2-x}$ [b] $f(x) = \frac{x-2}{x^2-4}$ [c] $f(x) = \frac{x^2-9}{x^2-x-6}$ [d] $f(x) = \frac{x^2-4}{x^3-3x^2-6x+8}$

[4] For each function, state the y -intercept.

[a] $f(x) = \frac{2}{2-x}$ [b] $f(x) = \frac{x-2}{3x}$ [c] $f(x) = \frac{x^2-9}{x^2-x-6}$ [d] $f(x) = \frac{x^2-4}{x^3-3x^2-6x+8}$

[5] For each function, state the non-vertical asymptote.

[a] $f(x) = \frac{2}{2-x}$ [b] $f(x) = \frac{x-2}{3x}$ [c] $f(x) = \frac{3x^2-1}{x^2-x-6}$ [d] $f(x) = \frac{4+x^3}{2-x^2-x^3}$

[e] $f(x) = \frac{x^2-4}{x-1}$ [f] $f(x) = \frac{x^2-2x+1}{x}$ [g] $f(x) = \frac{3x^2-1}{x+3}$ [g] $f(x) = \frac{x^4}{x^2+x+1}$

[6] For each function, state the ordered pair of the removable discontinuity (the “hole”).

[a] $f(x) = \frac{x+1}{x^2-1}$ [b] $f(x) = \frac{x^3-x}{2x}$ [c] $f(x) = \frac{x-3}{x^2-x-6}$ [d] $f(x) = \frac{x^2-16}{x^2+6x+8}$

[e] $f(x) = \frac{x+1}{x^3-x^2-x+1}$ [f] $f(x) = \frac{x^2-16}{x^3-5x^2+2x+8}$

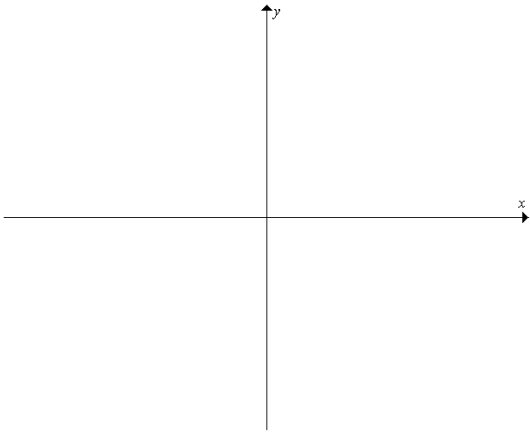
[7] Factor and find all zeros: [a] $P(x) = x^4 - 12x^3 + 52x^2 - 96x + 64$ [b] $P(x) = x^3 - 8$

[8] Write a third-degree polynomial with the roots $1-4i$ and 2 .

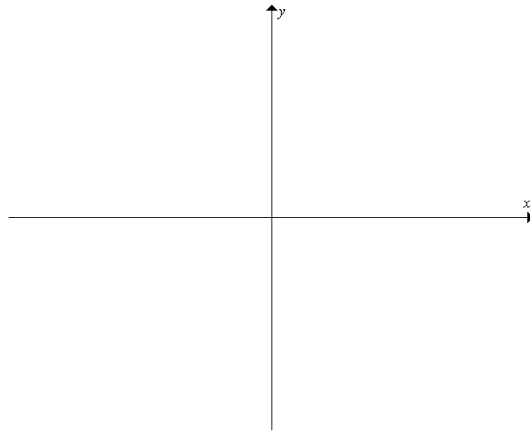
[9] Evaluate each of the following. [a] $(2-3i)^2$ [b] $(1+i)^4$ [c] $\frac{2+i}{1-i}$ [d] $|4-3i|$

[10] Sketch each function.

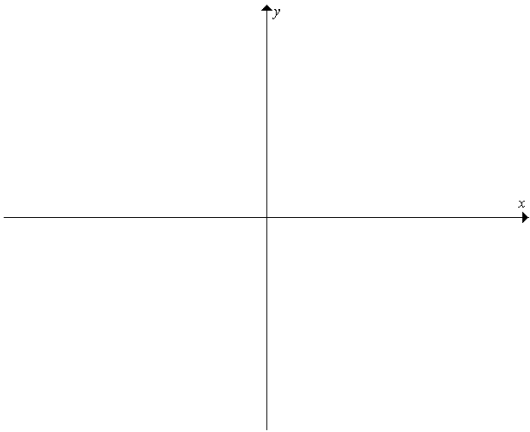
[a] $y = \frac{x+2}{x-2}$



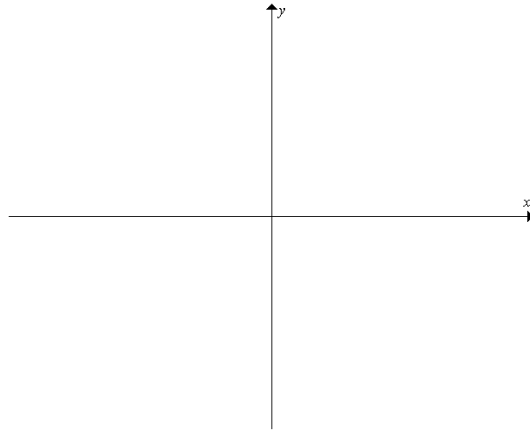
[b] $y = \frac{x^2-4}{x^2-1}$



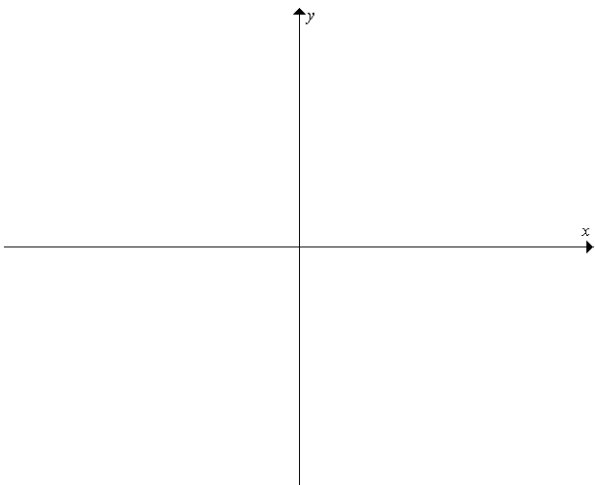
[c] $y = \frac{x^2-4}{x-1}$



[d] $y = \frac{x^2-3x-4}{x^2-1}$



[c] $y = (x-2)^2(x+1)$



[d] $y = (x-1)(x+2)^3$

