

QUESTIONS ADDED BY UT AUSTIN FACULTY MEMBERS

Supplemental test topics: functions (including inverses and composition); logarithms; the distance formula in a plane; rational fractions; radicals; roots of higher order equations.

Sample test items:

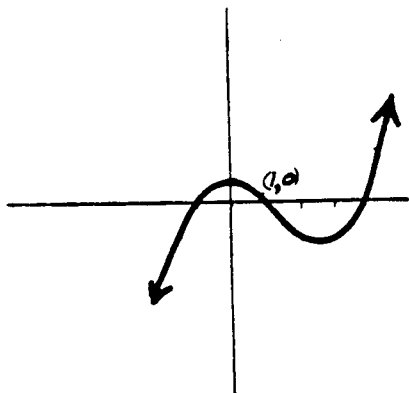
1. Given that $\log_{10} 3 = .477$ and $\log_{10} 5 = .699$, find $\log_{10} 18$.

(a) 1.176 ; (b) 1.255 ; (c) 1.431 ; (d) 1.908 ;

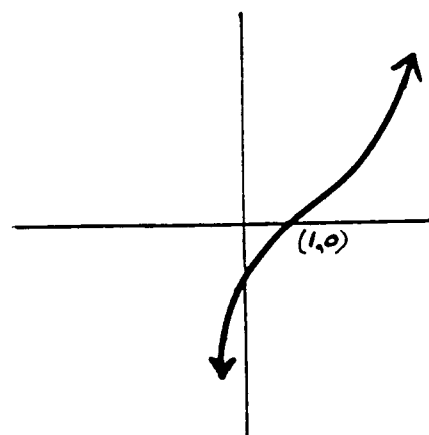
(e) none of (a) - (d) .

2. The sketch of the graph of $y = \frac{x-1}{x^2-3x-4}$ looks like:

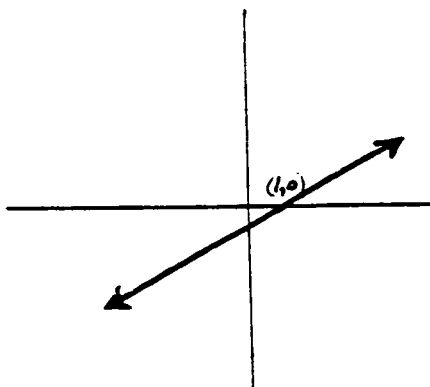
(a)



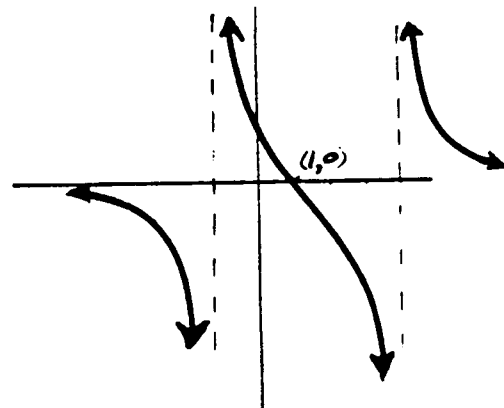
(b)



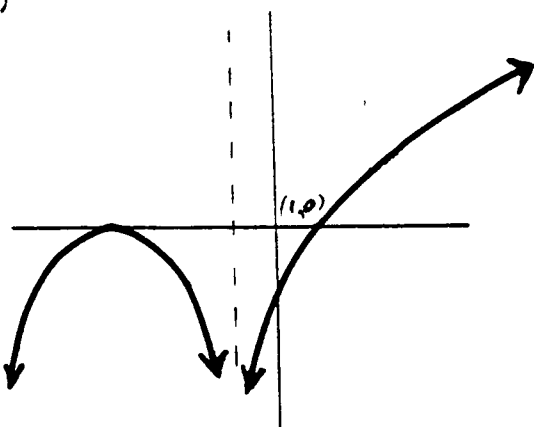
(c)



(d)



(e)



3. The smallest real root of $6x^3 - 7x^2 - x + 2 = 0$ is:

(a) 1 ; (b) $-\frac{1}{2}$; (c) $\frac{7}{6}$; (d) -3 ; (e) none of (a) - (d)

4. Given that $x > 1$, simplify and leave the result with a rational denominator:

$$\frac{\sqrt{x+1}}{\sqrt{x-1}} + \frac{\sqrt{x^2-1}}{4} + \frac{\sqrt{x-1}}{\sqrt{x+1}}$$

(a) $\frac{x^2 + 8x - 1}{4\sqrt{x^2 - 1}}$; (b) $\frac{\sqrt{x^2 - 1}}{4} - 2$; (c) $\frac{(8x + x^2 - 1)\sqrt{x^2 - 1}}{4(x^2 - 1)}$

(d) $\frac{(8x - x^2 - 3)\sqrt{x^2 - 1}}{4(x^2 - 1)}$; (e) $\frac{8x + x^2 - 1}{4(x - 1)}$

5. If $f(x) = 3x^5 - 2$, $g(x) = x^2 + 4$, then $(f^{-1} \circ g)(x) =$

(a) $3(x^2 + 4)^5 - 2$; (b) $3x^7 + 12x^5 - 2x^2 - 8$; (c) $\frac{x^2 + 4}{3x^5 - 2}$;

(d) $\frac{1}{3(x^2 + 4)^5 - 2}$; (e) $\left(\frac{x^2 + 6}{3}\right)^{1/5}$

Answers to Sample Questions:

1. (b) 2. (d) 3. (b) 4. (c) 5. (e)

There will be 10 supplemental items on the test.