

1. Evaluate $16^{\frac{3}{4}}$.

2. For $f(x)=2x+3$, find $f^{-1}(11)$.

3. For $F(x)=(x^2-9)/(x-3)$, find $F(5)$.

4. Find B, the squared-factor coefficient in the worked decomposition.

5. Evaluate $16^{-\frac{3}{4}}$.

6. Two roots in the substituted variable always give exactly two real solutions in x .

☐ True ☐ False

7. Every intersection point is included if either boundary is solid.

☐ True ☐ False

8. The graphs $y=4/x$ and $y=4/x^2$ have the same outputs for every negative x .

☐ True ☐ False

9. A composite is defined wherever its inner function is defined.

☐ True ☐ False

10. Every real root of a polynomial must change the sign of its values.

☐ True ☐ False

1. **8.0**

$16=2^4$, so $16^{\frac{3}{4}}=2^3=8$.

2. **4.0**

Solve $2x+3=11$, giving $x=4$.

3. **8.0**

5 is allowed; after factor cancellation, $F(5)=5+3=8$.

4. **1.0**

At $x=-1$ in the identity, $1=B$.

5. **0.125**

The fourth root of 16 is 2; its cube is 8, then take the reciprocal.

6. **False**

Do not report $u=1$ and $u=4$ as the x solutions of the quartic. Taking a square root needs both signs, but a principal square-root expression is nonnegative. A quadratic in u can have two real roots while one or both violate u 's domain.

7. **False**

A dashed boundary is not part of the region, even where it meets a solid boundary. Solving for intersection x -values gives the horizontal extent, not all allowed coordinates. A region for OR is the union, which can be much larger than the overlap.

8. **False**

Never plot $x=0$ or draw a stroke joining the two branches through it. The reciprocal-square graph is not the reciprocal graph with the negative branch removed; the entire left branch is reflected above the x -axis for positive a . These particular curves do not meet $y=0$, but “no curve can ever cross any asymptote” is not a valid general rule.

9. **False**

Checking only the inner domain is insufficient. Do not multiply the inequality by $x-1$ before deciding its sign. An excluded intermediate denominator remains excluded even if another form appears simpler. A formula and domain together define the composite function.

10. **False**

The number of distinct roots need not equal the degree. A repeated root is one x -intercept even though its factor occurs more than once. Do not alternate the sign at an even-multiplicity root. A sketch shows structure; exact turning-point coordinates require further analysis, not guessed readings from the picture.