This document provides revised scaffolded questions to help students prepare for questions 29 through 32 of the enVision Algebra 2 Progress Monitoring Assessment Form C. Note that questions 29 and 30 are not explicitly in the provided assessment, so they are treated as hypothetical based on the scaffold content. Each question includes four scaffolded steps to build understanding from basic concepts to the level required by the assessment, with clear guidance for concept-naive students.

Question 29: Properties of Sine Functions (Hypothetical)

The assumed question asks to evaluate statements about $y = 2\sin(x)$, including domain, vertical asymptotes, zeros, decreasing intervals, and period. The following questions build understanding of sine function properties.

29.1 **Basic Sine Properties**: For $y = \sin(x)$, domain is all reals, range is $[-1, 1]$, period is 2π:

    a) True/False: Domain is all real numbers: True

    b) True/False: Zeros at $x = 0, \pi$: True

    c) Why no vertical asymptotes? _____

29.2 **Transformed Sine**: For $y = A\sin(Bx) + C$, amplitude $= |A|$, period $= \frac{2\pi}{|B|}$:

    a) $y = 3\sin(x) + 1$: Amplitude $= 3$, Period $= 2\pi$, Range $= [-2, 4]$

    b) $y = \sin(3x)$: Amplitude $=$ _____, Period $=$ _____

29.3 **Zeros and Intervals**: For $y = 3\sin(x)$:

    a) Zeros in $[0, 2\pi]$: $\sin(x) = 0$ at $x = 0, \pi, 2\pi$

    b) Decreasing: $\sin(x)$ decreases from $\frac{\pi}{2}$ to $\frac{3\pi}{2}$.
       For $y = 3\sin(x)$, interval: _____.

    c) Practice: Zeros of $y = \sin(2x)$ in $[0, 2\pi]$: _____.

29.4 **Applying to the Original Problem**: For $y = 2\sin(x)$:

    a) Domain: All real numbers (True)

    b) Vertical asymptotes at $x = 1$: False (sine is continuous)

    c) Zeros at $x = 0, 2\pi$: True

    d) Decreasing in $\frac{\pi}{2} < x < \frac{3\pi}{2}$: True

    e) Period $= 2\pi$: True

Question 30: Exponential Functions and Growth Factors (Hypothetical)

The assumed question asks to compare the growth factor of f (points $(0, 4)$, $(1, 12)$, $(-1, \frac{4}{3})$) to other functions. The following questions build understanding of growth factors.

30.1 **Growth Factors**: For $f(x) = ab^x$, b is the growth factor:

    a) $f(x) = 2 \cdot 4^x$: $b = 4$

    b) $f(x) = 5 \cdot (0.8)^x$: $b =$ _____

    c) Why does $b > 1$ mean growth? _____

30.2 **Finding Growth Factors**: For points $(0, 3)$, $(1, 9)$:

    a) $f(0) = a = 3$

    b) $f(1) = 3b = 9$, $b = 3$

    c) Verify: If another point is $(2, 27)$, check: _____.

30.3 **Comparing Growth Factors**: Compare:

    a) $f(x) = 2 \cdot 5^x$, $g(x) = 3 \cdot 2^x$: $5 > 2$, so $f(x)$ grows faster.

    b) $f(x) = 4^x$, $g(x) = 1.5^x$: _____ grows faster.

30.4 **Applying to the Original Problem**: Points $(0, 4)$, $(1, 12)$:

    a) $a = 4$, $4b = 12$, $b = 3$

    b) Verify: $(-1, \frac{4}{3})$: $f(-1) = 4 \cdot 3^{-1} = \frac{4}{3}$

    c) Compare: $4^x (b = 4)$, $12^x (b = 12)$, $\left(\frac{4}{3}\right)^x (b = 1.33)$.
    Greater than 3: _____, _____.

Question 31: Fractional Exponents and Radicals

The original question asks to complete a statement about $81^{\frac{1}{3}}$. The following questions build understanding of fractional exponents.

31.1 **Fractional Exponents**: $a^{\frac{1}{n}} = \sqrt[n]{a}$:

    a) $16^{\frac{1}{2}} = \sqrt{16} = 4$

    b) $64^{\frac{1}{3}} = \sqrt[3]{64} =$ _____

    c) Why does $a^{\frac{1}{3}} = \sqrt[3]{a}$? _____

31.2 **Exploring Bases**: For 64:

    a) $64 = 4^3$, so $64^{\frac{1}{3}} = (4^3)^{\frac{1}{3}} = 4$

b) $64^{\frac{1}{2}} = \sqrt{64} =$ _____

31.3 **Verifying Exponents**: Verify $64^{\frac{1}{3}} = 4$:

    a) $(64^{\frac{1}{3}})^3 = 64$, so $4^3 = 64$

    b) Practice: Verify $16^{\frac{1}{2}} = 4$: _____.

31.4 **Applying to the Original Problem**: For $81^{\frac{1}{3}}$:

    a) $81 = 3^4$, so $81^{\frac{1}{3}} = \sqrt[3]{81}$

    b) Verify: $(\sqrt[3]{81})^3 = 81$

    c) Equivalent to: _____. Because: _____.

Question 32: Analyzing Expression Behavior

The original question asks which statements result in $2x^2 + 3 + \frac{7}{y}$ increasing, for $x, y > 0$. The following questions build understanding of expression behavior.

32.1 **Term Analysis**: For $2x^2 + 3 + \frac{7}{y}$:

    a) $2x^2$: As x increases, increases

    b) $\frac{7}{y}$: As y increases, _____

    c) Why does $\frac{7}{y}$ decrease? _____

32.2 **Single Changes**: For $x = 1$, $y = 2$, value $= 2(1)^2 + 3 + \frac{7}{2} = 8.5$:

    a) x to 2, $y = 2$: $2(2)^2 + 3 + \frac{7}{2} = 14.5$ (increases)

    b) y to 4, $x = 1$: $2(1)^2 + 3 + \frac{7}{4} = 6.75$ (_____)

32.3 **Combined Changes**: For $x^2 + 1 + \frac{5}{y}$, test:

    a) x increases, y decreases: Both terms increase, so expression _____.

    b) x decreases, y increases: Both terms decrease, so _____.

32.4 **Applying to the Original Problem**: For $2x^2 + 3 + \frac{7}{y}$:

    a) x increasing, y decreasing: Increases (B)

    b) y decreasing, x constant: Increases (D)

    c) x increasing, y constant: Increases (F)

    d) Select: _____, _____, _____.