## S.ID.B.6: Regression 9

1   The accompanying table shows wind speed and the corresponding wind chill factor when the air temperature is 10ºF.

| Wind Speed (mi/h) $x$ | Wind Chill Factor (ºF) $y$ |
|---|---|
| 4 | 3 |
| 5 | 1 |
| 12 | −5 |
| 16 | −7 |
| 22 | −10 |
| 31 | −12 |

Write the logarithmic regression equation for this set of data, rounding coefficients to the *nearest ten thousandth*. Using this equation, find the wind chill factor, to the *nearest degree*, when the wind speed is 50 miles per hour. Based on your equation, if the wind chill factor is 0, what is the wind speed, to the *nearest mile per hour*?

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## Answer Section

1   ANS:

$$0 = 13.0134 - 7.3135 \ln x$$
$$-13.0134 = -7.3135 \ln x$$

$y = 13.0134 - 7.3135 \ln x, -16, 6.$   $y = 13.0134 - 7.3135 \ln(50) \approx -16.$   $\dfrac{13.0134}{7.3135} = \ln x$

$$x = e^{\frac{13.0134}{7.3135}} \approx 6$$

REF:   010933b